July/August 1994 $2.00

MONTANA OUTDOORS

Our Point of View

Western tanager

JAN L. WASSINK

"Look, a neotropical migratory bird."

"Right!"

"No, really, I'm sure it is."

"You're sure?"

"Nearly every bird in Montana is one."

"Is one what?"

"A neotropical migrant."

"It's too cold up here. We have robins, meadowlarks, sparrows, and stuff like that."

"Right. They're all neotropical migrants. It means they go south for the winter—way south."

"You mean like my Gramma?"

"Yeah, kind of."

"Look, there's one. It's yellow and red and black. It's... uh...a tangerine."

"No, a tanager, a western tanager. It lives in forests. It flips around and eats bugs."

"Yuck!"

"Hear that? It's a woodpecker."

"Let's see if we can find it."

"Hey kids, what are you doing?"

"Oh, nothing."

Well, maybe you, too, would like to enjoy the neotropical diversity of Montana's fair-weather guests. Listen for a sharp *zeet* over the sound of rapids as you look for a slate-gray dipper as it bobs from rock to rock. Or watch a killdeer dragging itself across a meadow, feigning injury to lure predators far from its nest. Each bird has its own habits, its own song, and its own colors. So take flight on page 15.

Patrick J. Graham, Director
Montana Department of Fish, Wildlife & Parks

JOHN R. FORD

The oxbows and backwaters of the Isaac Homestead Wildlife Management Area make perfect nesting habitat for wood ducks (page 10).

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Covers—The common yellowthroat—captured for our front cover by RICK AND NORA BOWERS—is just one of 144 bird species in Montana classified as "neotropical migrants"—birds that fly south of the U.S. border each winter in search of food, then return in spring to nest and raise their young (see "Birds of Passage" beginning on page 15). Abundant and majestic, Canada geese are sought by hunters and wildlife watchers alike—the birds gracing our back cover were photographed by KEITH A. SZAFRANSKI of Livingston.

BILL GARDNER

Madison Trout *in the* Marias

ALLITERATION ASIDE, the Madison and Marias rivers have little in common. The mighty Madison, a world-renowned trout stream, starts in Yellowstone National Park and flows through a majestic mountain valley before reaching the tourist town of Ennis. Downstream from Ennis, the Madison journeys through canyon and plain before helping to form the Missouri River.

The Marias begins and ends its life in the subtle prairie of north-central Montana. Historically, its trout were few, its color brown, and its towns far from the tourist trade.

Now, however, the rivers share a bond through a transfusion of wild Madison rainbows into a small stretch of the Marias.

"The Marias isn't real prime trout habitat, but there is a potential there," says Department of Fish, Wildlife & Parks (FW&P) fisheries biologist Bill Gardner. That potential comes from a dam. From Montana to New Mexico, certain high plains rivers have become trout meccas because of dams. Cold water released from the artificially created impoundments have beckoned fishing pilgrims to shrines like the Bighorn, Missouri, Green, and San Juan rivers. Now add the Marias, at least in the lightweight division.

Gardner foresees a modest goal of 500 catchable trout per mile in the river's 15 miles below Tiber Dam, which lies south of the town of Chester. While not in the same league with other western rivers that hold upwards of 3,000 trout per mile, the Marias' target represents a population the river can support and anglers will enjoy.

"It's a tough river to fish," says Bob Rooley, a grade school science teacher from Chester. When talk swings around to Montana trout, few consider the Marias. That's fine with Rooley and fishing partner Bill Schlepp. They are among the few who regularly contemplate the two- to five-pound rainbow and brown trout that lurk in the river below the dam.

"We like to go fishing in August when the grasshoppers are out," Rooley says. "Some days we get ten to twelve [fish], other days two or three."

by BRUCE AUCHLY

Since 1990, eggs and milt taken from spawning rainbows trapped in the Madison River have formed the basis for the Marias River tailwater fishery.

BRUCE AUCHLY

BRUCE AUCHLY

The pair are fly fishermen, though that technique's not necessary. Charlie Frey, also of Chester, goes after brown trout in the fall with lures and spinners. The biggest he has caught tipped the scale at five pounds. "I'm not much of a fly fisherman," Frey says, "except in the winter for whitefish."

Water flowing out of Tiber Dam is clear and cold. Biologists call it a tailwater fishery. It's a perfect equation for trout, though perfection comes hard to the Marias.

Born in a thousand rivulets and springs along the Rocky Mountain Front and in Glacier National Park, the Marias officially begins where Cut Bank Creek and the Two Medicine River meet on the southeastern boundary of the Blackfeet Indian Reservation. By then, nature has sealed the Marias' fate as a prairie river. Before the hand of man reshaped the landscape, the river was probably populated by suckers and saugers, paddlefish, goldeye, and channel catfish. And each spring, as snowmelt tumbled out of the mountains, the Marias would swell and run wild, like an undisciplined child. Indeed, Indians of the plains called it "the river that scolds at all others."

When the Lewis and Clark expedition reached the confluence of the Marias and Missouri rivers on June 3, 1805, they had trouble telling tributary from main stem, such was the size of the Marias. The river was "...in the same boiling and roling manner which had uniformly characterized the Missouri throughout its whole course so far."

Lewis spent five days reconnoitering the silt-laden river before he became convinced it was not the Missouri. He promptly named it Maria's River in honor of his cousin, Miss Maria Wood. History dropped the apostrophe. Yet the river remained the same for 150 years.

In 1956, the federal Bureau of Reclamation completed Tiber Dam and created Lake Elwell. Only bureaucrats use that name, everyone else knows the body of water as Tiber Reservoir. Along with flood control and irrigation came a chance to angle in the reservoir for stocked fish not native to the prairie: rainbow and brown trout, perch, walleye, lake trout, and northern pike.

No one, apparently, gave the river immediately below the dam much thought. A few fish, mostly rainbows and browns, washed down from the reservoir and lived. But for 15 miles downstream, native fish couldn't survive the river's clear, cold transformation. In the open vastness of the prairie, far from any major population center, probably few people realized trout lived there. No official management scheme began until the late 1970s, when FW&P biologists completed a Missouri River watershed inventory and listed trout in the Marias. By the early 1980s, a plan began to emerge to manage the tailwater section for trout.

"Trout are best because of the open habitat and clear, shallow water; better than, say, bass," Gardner the biologist says. All the necessary ingredients are there: mayflies, caddisflies, and a few stoneflies. Just ask a fisherman: "All the fish we caught were fat," concurs Rooley.

At first, the idea was to simply maintain minimum flows and the trout would be fruitful and multiply. It didn't work. Flows of 200 cubic feet per second (cfs) in spring and late fall turned out to be too minimal. "There was no [fisheries] plan in the past for how they discharged water from the reservoir," Gardner says.

In 1986, the department reached an informal agreement with the Bureau of Reclamation to keep at least of 500 cfs flowing from the dam year-round. That was tough to stick to in the dry years of the late 1980s.

BRUCE AUCHLY

The department and the dam operators also agreed that water would be released from the bottom of the 140-foot-deep reservoir, not the top. The difference is one of degrees. Water from the reservoir bottom comes out at 56 to 60 degrees F. Top water in late summer registers a tepid 70 degrees, which quickly warms to 75 and 80 in the prairie sun—too hot for trout.

YET ALL THE MANAGEMENT agreements still were not sufficient. Rainbows washed down from the reservoir had trouble spawning. That's because river-dwelling rainbows need tributaries to spawn, and there are no good tributaries below Tiber Dam. "The fish in there may not be genetically able to handle a river habitat," Gardner says. To avoid the endless cycle of planting hatchery trout in a river system, something FW&P abandoned 20 years ago, Gardner looked elsewhere for wild rainbows and settled on the Madison River.

First stocked nearly 100 years ago, rainbow trout in the Madison have adapted well. The majority of Madison River rainbows spawn in the river's main stem, not its tributaries. Genetic testing of the Madison fish reveals they have much more variability, which normally means a better ability to adapt to wild environments.

Since 1990, fisheries biologists and fish culturists from the department's hatcheries have traveled to the Madison in early April to trap spawning rainbows and take eggs and milt. Eggs are gathered, fertilized, and disinfected, then taken to the Yellowstone River Trout Hatchery in Big Timber for quarantine until tests prove the eggs are virus-free. At that point the eggs are brought into a hatchery for incubating and raising. Eventually, the offspring are planted into the Marias.

In all, 50,000 fish have been released in the river, with the final batch of 13,000 yearlings set free this spring. Members of the Hi-Line Sportsman's Club in Chester and local boy scouts have helped stock the fish. The stocking program has not gone without a hitch or two.

"For awhile we were stocking [2-inch] fingerlings in the fall," Gardner says. "Survival was minimal, mostly due to the naturally poor survival rate of fingerling trout."

Low river flows in the fall force young fish out of the shallows and away from important river edge habitats like brush and rock piles. As a result, the smaller fish must move into deeper pools, where it's a fish-eat-fish world.

In 1993 and again this year, FW&P biologists added spring stocking to the regular fall schedule. Springtime means more water in the river and, most important, bigger fish to plant, as they spend the winter in the comfortable confines of a hatchery. "It's a lot easier for a five-inch fish to make it to a nine-inch fish than for a two-inch fish to survive the winter, then grow to nine inches," Gardner says.

The results so far are promising. Population estimates last year pegged 267 trout per Marias mile.

"That's half way to our goal," Gardner says. "Last fall, we saw yearling trout from the previous spring in pretty good numbers. By the spring of 1995, when the first batch of fingerling plants should be full-grown spawners and producing wild progeny on their own, we'll be able to see if our efforts are paying off." ■

NEAL & MARY JANE MISHLER

In all, 50,000 trout—all offspring of Madison River rainbows—have been released into the Marias (upper left). According to local fishermen, the stocking program is paying dividends.

JIM LIEBELT

The Life and Times of the

SILVER FLASH

by JIM LIEBELT

THIS IS A STORY about a certain fish, a fish known as the "Silver Flash." Many of you are probably not familiar with this Montana native, even though it is common in the Yellowstone and Missouri rivers and was first described in the journals of Lewis and Clark as they made their way through Montana in 1805.

In the journal entry of Tuesday, June 11, 1805, Lewis wrote:

> Goodrich, who is remarkably fond of fishing, caught several douzen fish of two different species—one about 9 inches long of white colour round and in form and fins resembles the white chub common to the Potomac: this fish has a smaller head than the Chubb and the mouth is beset both above and below with a rim of fine sharp teeth: the eye moderately large, the puple dark and the iris which is narrow is of a yellowish brown colour. they bite at meat or grasshoppers. this is a soft fish, not very good, tho' the flesh is of a fine white colour [the first description of the sauger]. the other species is precisely the form and about the size of the well known fish called the 'Hickory Shad' or 'old wife', with the exception of the teeth, a rim of which garnish the outer edge of both the upper and lower jaw: the tongue and pallet are also beset with long sharp teeth bending inwards, the eye of this fish is very large, and the iris of a silvery colour and wide. of the 1st species we had caught [sauger] some few before our arrival at the entrance of Maria's [Marias] river, but of

JIM LIEBELT

Once goldeye reach maturity, males can be distinguished from females by the shape of the anal fin. The female's anal fin is more or less straight with a slightly concave edge (upper fish), while the male's is somewhat rounded (lower fish).

> the last we had seen none until we reached that place and took them in Missouri above it's junction with that river. the latter kind are much the best, and do not inhabit muddy water....[the first description of the goldeye].

Several things are odd about this entry. One is Lewis' description of the eye of the goldeye—i.e., "the iris of silvery colour." The iris is not silvery, as Lewis says, but a striking yellowish-gold, hence the fish's name. Also, Lewis' statement that goldeye "do not inhabit muddy water" is surprising, since their habitat today is frequently turbid waters of large rivers or muddy, shallow waters of larger lakes. Lewis further states that goldeye "are much the best," presumably a reference to palatability. This, too, is puzzling, since anyone who has had experience preparing fresh goldeye for the table would be stretching the truth to say they are "much the best." In fact, pan frying fresh goldeye is almost a sure method for driving any living creature with a reasonable sense of smell right out of the kitchen. As W.B. Scott and E.J. Crossman state in *Freshwater Fishes of Canada*, "The taste of fresh goldeye is said to be insipid, muddy, and like that of salted brown paper, the flesh is soft and an unattractive grey color."

So, what are we to believe about the Silver Flash? What makes the fish special and what are some of its attributes? Let's begin with the fact that the goldeye and its very close relative, the mooneye, are found only in North America, and they are the only two members of the family Hiodontidae. The goldeye ranges from central Canada southward through the mid-section of the U.S. to Oklahoma, Mississippi, and Alabama; Montana represents the westernmost extension of its range in the U.S. The mooneye shares portions of the same range in the East but comes only as far west as North Dakota.

The goldeye's scientific name, *Hiodon alosoides*, describes two of its characteristics: *Hiodon* means toothed hyoid (the hyoid is a U-shaped bone found in the mouth), and *alosoides* means shadlike, referring to the fish's general shape and similarity to the shad, a member of the herring family. Like the shad, the goldeye is a deep, flat-bodied fish with a greenish back and silvery sides.

In addition to its striking appearance, the goldeye has several biological traits unique in the world of freshwater fishes. It is one of a very few species where males and females can easily be differentiated by the outward appearance of the anal fin. This trait, known as sexual dimorphism, occurs when the fish become sexually mature. The male's anal fin becomes rounded or lobe-like, while the female's is more or less straight with a slightly concave edge (see photos).

Their spawning behavior, too, remains somewhat of a mystery. It is thought they spawn during darkness in spring after water temperatures reach the low 50 degree F. range for a three- to six-week period. Spawning probably takes place in the pools and backwaters of turbid rivers. Males have a relatively small amount of sperm, which suggests close proximity of pairs during spawning.

Females 12 inches in length produce about 7,000 eggs, but larger individuals may generate as many as 25,000. The eggs are steel-blue in color when nearly mature and become translucent when shed. They are semi-buoyant, floating beneath the surface until hatching takes place in about two weeks. This is another unusual trait for a freshwater fish, since most species spawn close to the bottom or in some cases prepare nests prior to spawning. Trout and

salmon typically bury their eggs in gravel nests called redds.

Newly hatched goldeye are about a quarter of an inch long; sustained by their yolk sac for the first few days of life, they float vertically at the surface until they grow large enough to feed on plankton (tiny aquatic organisms that drift with the current). In Montana, goldeye reach about four inches in length the first year. The largest goldeye reported in the state was 18.7 inches long and weighed three pounds .

Because the goldeye is most active at night and often inhabits turbid water, the large eye is adapted to dim light. The retina—the sensory membrane lining the eye—contains only rods, the photoreceptors that do not discriminate fine detail or probably color differences but are sensitive to very dim light. In most vertebrates, the retina also contains cones, the nerve cells that help discriminate color and detail.

GOLDEYE FEED ON a variety of organisms, from tiny plankton to small fishes and even frogs and mice. The bulk of their diet, though, consists of aquatic and terrestrial insects. It is common to see goldeye dimpling the water at dusk as they feed on surface insects. Fly fishermen can take advantage of this characteristic, as the Silver Flash eagerly takes a variety of wet and dry flies. Once hooked, goldeyes put up a brief but spirited battle, occasionally jumping or thrashing on the surface. They also strike at a wide array of lures and natural baits and can elicit a string of oaths from fishermen who catch them when trolling for walleye.

In truth, the goldeye has not won the hearts of many fishermen in this neck of the woods. Yet, one of the great pleasures of my youth was to fish around the mouth of Belt Creek where it enters the Missouri River a few miles below Morony Dam. Here, in just a few hours of frantic fishing, I could sometimes catch one goldeye after the other during summer. My personal best was catching and releasing 80-plus goldeye in an afternoon's fishing. What they lacked in fighting ability, they more than made up in numbers and willingness to bite.

As a rule, goldeye do not grow very large. They usually average less than a pound, and a two-pound fish is exceptional. The current state record goldeye of 2.91 pounds was caught by Lance "Bubba" Kielb, who was 4 years old at the time, in an irrigation ditch near Malta in 1989. Stories of goldeye over three pounds from Nelson Reservoir surface occasionally, but none has been officially entered.

JIM LIEBELT

Goldeye will strike at a variety of flies and lures.

Given their relatively small size, dubious sporting qualities, and questionable palatability, some people may be tempted to ask, "What good are they?" It's not uncommon to see goldeye thrown on the bank rotting in the sun, sometimes piles of them. It is rather a sad tribute to the Silver Flash as well as a testimony to the ethical poverty of some fishermen.

Strange as it may seem, goldeye are almost revered in Canada, where they were once abundant in certain drainages. Although commercially harvested for dog food as early as 1876, the species' fortunes didn't begin to rise until 1911, when "Winnipeg Smoked Goldeye" first appeared on the menus of Canadian transcontinental railway trains. It quickly became a gourmet item and was promoted as a Canadian delicacy.

Between 1926 and 1929, commercial catches reached a million pounds annually, but the demand regularly exceeded the supply. Catches steadily declined after 1931 and by 1965 were as low as 180,000 pounds. In other words, the Canadian commercial goldeye fishery had been overexploited and has never recovered. Currently, only about 20,000 to 30,000 pounds per year are harvested commercially in Canada, and the demand continues to far outstrip the supply. The average retail price paid for smoked goldeye in Canada is presently about $9 per pound (U.S. currency).

Originally, the fish were smoked over willow fires, which imparted a red color to the outside of the fish. After local supplies of willow were depleted, oak was substituted and color was added by a tasteless aniline dye that colored the skin red but not the flesh.

To obtain the best product, goldeye are frozen fresh, usually for at least 30 days, which improves the texture and flavor of the fish. They are then thawed as needed, brined, dyed, and smoked for five to seven hours. The fish are kept cool but not frozen after processing and must be consumed within a few days.

As Canadian supplies diminished, new sources emerged in the U.S., one of which was Fort Peck Reservoir. Between 1966 and 1990, over 3.8 million pounds of goldeye were netted in the reservoir, primarily by residents of the area. The vast majority of the fish were sold to the Winnipeg market. However, commercial fishing for goldeye in Fort Peck is no longer a viable enterprise, and it is not likely to be resumed in the future.

So there we have the story of the Silver Flash. Although disdained by many, the goldeye has a special place in the hearts of at least a few of us. Even though the Missouri River has been altered in many ways since the days of Lewis and Clark, the goldeye seems to be thriving and adapting well to the changes. Perhaps some time in the future this beautiful fish, with its dazzling silver sides that flash in the sun, will gain the respect it deserves in the annals of fishing. ■

ERWIN & PEGGY BAUER

Raccoon

Canada geese

A LEOPOLDIA

LANDS LEGACY

by SCOTT DENSON

A HEN MALLARD shepherds her half-grown brood along the grassy bank of a river backwater. A warbler darts among cottonwood branches, a flash of yellow against vibrant green leaves. At dusk, a whitetail doe leads her fawn onto a river sandbar for a leisurely drink. These are common summer scenes at the Isaac Homestead Wildlife Management Area (WMA), a lush mosaic of Yellowstone River bottom, adjacent uplands, and agricultural fields near Hysham in southeastern Montana.

Other seasons have their attractions at Isaac Homestead as well. Spring is a good time to observe the mating rituals of waterfowl, pheasants, and songbirds, or to pick mushrooms and asparagus along the area's many ditches and waterways. Crisp fall mornings find hunters with bird dogs combing the brush for an educated rooster, or waiting expectantly among several dozen decoys for a flight of Canada geese.

Named for Joseph Isaac, a soldier who settled the land after his discharge from the army at Fort Custer in 1878, the site was purchased by the Department of Fish,

KEITH A. SZAFRANSKI

JOHN R. FORD

Wood duck

N ALLIANCE

Isaac Homestead Wildlife Management Area

Wildlife & Parks (FW&P) in 1969. Since then it has been managed with three goals in mind: (1) to maximize wildlife populations and maintain the highly productive riparian communities; (2) to enhance recreational opportunities, especially hunting and fishing; and (3) to promote good land stewardship by demonstrating how habitat management systems can work to the mutual benefit of wildlife and agricultural interests.

In his classic text on game management published in 1933, Aldo Leopold recognized the importance of composition and interspersion of environmental types as key determinants of wildlife productivity. In keeping with this principle, management at Isaac Homestead has focused on protecting the land and water resources while maintaining a diversity of habitat types.

Aided by the dynamic nature of the Yellowstone River, which creates an ever-changing network of channels, islands, backwaters, and oxbows, the WMA provides habitat for a rich mixture of wildlife species. White-tailed deer are permanent

DONALD M. JONES

White-tailed deer and ring-necked pheasants (above photos) are two of the game species pursued by hunters at the Isaac Homestead WMA each autumn. Through share-cropping agreements with local land managers, food plots are left in the field for wildlife (opposite).

residents, while mule deer and antelope are occasional visitors. Some 100 species of songbirds, 19 species of waterfowl, and numerous shorebirds, raptors, upland game birds, furbearers, and small mammals are present at various times of year.

The 1,275-acre WMA consists of two separate parcels, Isaac East and West. Both areas support native grass, sagebrush, and riparian forest, with the west portion containing a complex of irrigated cropland. Together, the areas form an ideal interspersion of habitat types. Highly productive sandy loam soils support a cottonwood overstory along the river with an understory of willow, Russian-olive, and buffaloberry. Snowberry and wild rose are the dominant low-growing shrubs.

Fundamental to management of the WMA are the partnerships that allow the land to produce sustained annual crops of wildlife while minimizing conflicts over traditional agricultural and cultural values. In 1985, FW&P, the Bureau of Land Management, and local landowners developed a joint resource management plan for Isaac Homestead WMA, Howrey Island (631 acres of BLM riparian timber and grassland), and adjacent private lands. The objective is to conserve and enhance the wildlife, fisheries, recreational, and aesthetic values associated with the properties, with special emphasis on the sagebrush-grassland and riparian communities. Key elements include managing soil and vegetation through a grazing plan and game populations through hunter harvest.

The grazing plan employs a "rest-rotation" system developed 25 years

BILL MCRAE

ago by A.L. Hormay, a range scientist whose research demonstrated that managed grazing could enhance soil fertility and native plant communities to the benefit of both wildlife and livestock. With this system, in any given year one set of three pastures is grazed during the early grazing period (prior to seed ripening), one set is grazed late (after seed ripening), and one set is rested. The rotation is such that the late-grazed pastures are rested the following year. Using this strategy, full productivity of the various upland and riparian habitats has been maintained.

JOHN MCNEAL

AT ISAAC HOMESTEAD, sportsmen and women have the opportunity to harvest the wildlife bounty, while local landowners benefit through small grain

production and livestock grazing. Share-cropping agreements with land and livestock managers help maximize the wildlife potential. Production of small grain crops is planned so portions remain in the field as food for wildlife.

Food plots for pheasants are situated near adequate cover, and waste grain left over from harvest provides sufficient food for waterfowl. Through this partnership, sportsmen and and the local community are both winners. As envisioned by Aldo Leopold so long ago, good management can maintain traditional uses of the land while conserving soils, plant diversity, and wildlife for future generations. ■

ISAAC HOMESTEAD WILDLIFE MANAGEMENT AREA

DAVE BOOKS

The primary goal of the Isaac Homestead WMA is to provide a mixture of habitat types that enhances wildlife abundance, as well as recreational opportunities.

Location: In Treasure County midway between Miles City and Billings, approximately 7 miles west of Hysham.

Size: 1,275 acres divided into two portions: east—530 acres; west—745 acres, separated by 1 mile. FW&P owns 1,196 acres, and BLM owns 79 acres. The management plan includes Howrey Island, an additional 631 acres owned by BLM across the Yellowstone River from the west portion of the WMA.

Acquisition date: Initially purchased in 1969, with additional purchases in 1970 and 1973.

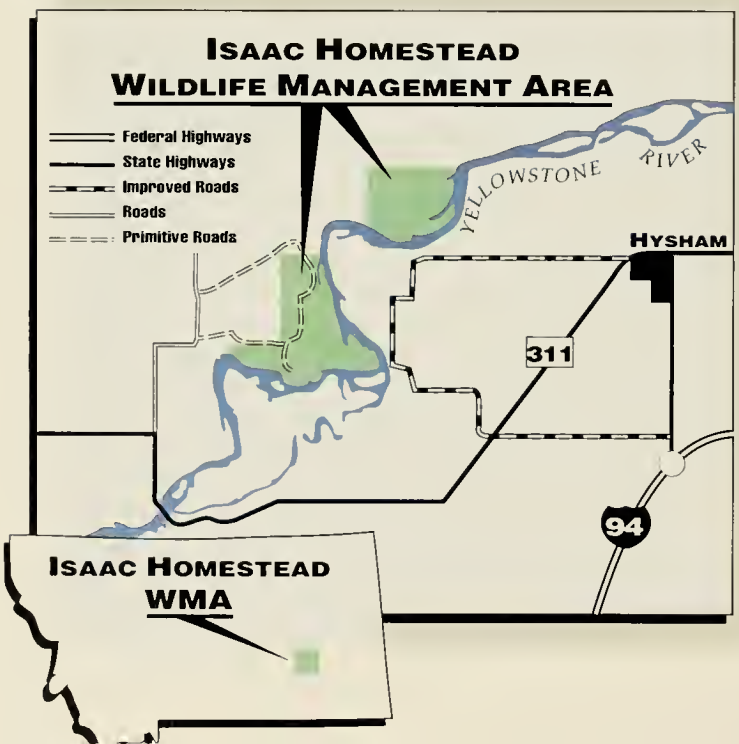
Access: Take Highway 311 from Hysham west for about 6 miles across the Yellowstone River bridge, proceed north on gravel by following the WMA signs.

Management goal: To provide an interspersion of habitat types that enhances wildlife abundance, particularly white-tailed deer and ring-necked pheasants, and to provide recreational opportunities.

Hunting opportunities: Hunting opportunities exist for waterfowl, upland gamebirds, and deer. Hunting pressure is quite high from time to time.

Fishing opportunities: Fishing opportunities exist on about 5 miles of Yellowstone River frontage throughout the year.

Wildlife viewing: White-tailed deer, upland gamebirds, furbearers, and numerous small mammals are present year-round; mule deer and antelope are seen occasionally. Canada geese, mallards, wood ducks, and mourning doves nest on the WMA, while 16 other species of waterfowl, some shorebirds, raptors, and about 100 species of songbirds can be found through much of the year.



Birds of Passage

Celebrating Montana's Long-Distance Travelers

AL TROTH

by Deborah Richie

An osprey over Flathead Lake slices the sky. A western tanager flames red, yellow, and black against a spruce on the flanks of the Snowy Mountains. The cry of a curlew swirls from the grasslands above the Missouri River.

Hundreds of miles separate each bird from the other in this state spanning 550 miles from east to west and 275 miles from north to south. The osprey seeks lakes and rivers with fish to eat and tall trees nearby for nesting. The tanager darts from a conifer limb to snap insects on the wing. The curlew is a bird of the prairie, probing the soil for insects with its sickle-shaped bill.

In spite of these differences of community, all three are considered "neotropical migrants," a term applied to the many birds that fly south of the U.S. border each winter in search of food. Hummingbirds, warblers, kingfishers, bluebirds, robins—even vultures—are just some of the birds falling into this category. These long-distance travelers return in the spring to nest, raise young, and repeat the cycle.

Both the red-eyed vireo (right) and cliff swallows (below) spend the winter months in South America, a journey of thousands of miles. Vireos and swallows are two of 144 species of landbirds that breed in Montana and winter in the "neotropics" or New World tropics, covering Mexico, Central America, South America, and the Caribbean islands.

ALAN G. NELSON

Red-eyed vireo

ERWIN & PEGGY BAUER

Cliff swallows

In Montana, over half (144 species) of our breeding land birds are neotropical migrants, and many are tiny songbirds. Most funnel into western Mexico and several to points even farther south. Among those that flap and glide all the way to South America are Swainson's hawks; bank, cliff, and barn swallows; red-eyed vireos; and bobolinks.

The birds that appear so miraculously one spring day in Montana have reason to sing. Their long flight is over.

Supremely adapted to a migratory life, these birds of passage have forged aerial trails for tens of thousands of years. Only in this century have they encountered obstacles greater than storms: human changes to the landscape.

Our knowledge of migratory birds in

Montana pales in comparison to studies in the eastern half of the country. What we know of serious declines in the East cannot be applied directly to the West. Western migratory birds winter mostly in western Mexico, while eastern migrants concentrate in Central America and the Bahamas. The landscape contrasts between West and East extend beyond coniferous and deciduous forest. Western migrants have adapted to powerful forces like wildfire.

To discover how our western birds are faring will take the concerted efforts of biologists and experienced volunteers. The U.S. Forest Service has initiated a vigorous program to better track the lives of these familiar summer residents of our streamsides, forests, and grasslands. The Montana Department of Fish, Wildlife & Parks (FW&P) is one of several participating agencies, all part of an international "Partners in Flight" bird conservation program.

Migratory Birds: Declines in the East

My father, David Richie, became a birdwatcher as a young boy growing up in New Jersey and Pennsylvania. I asked him how he became drawn to wild birds and what it was like to see warblers then compared with now. He sent me this description:

Back in the 1930s, it was customary for children with measles to be kept in a darkened room to prevent eye damage. It was a wonderful reprieve on the day it was deemed safe to venture outside—in my case, a glorious spring day with the backyard in bloom.

My mother had set chairs about 15 yards from a snowball bush with white blossoms tinged with brown from an apparent insect infestation. Happily feeding on the insects was an aviary of migrating warblers.

I no longer recall the varieties that passed by as I sat contentedly recuperating in the sunshine, but family lore includes a record five species at one time, including a comparatively rare Wilson's that stayed a few days, adding fat for the migration still ahead from our south Jersey refuge.

My older brother and I used to go on daybreak bird walks to pocket woodlands just outside town to revel in the warbler migration. In those days, the tops of the trees would seem to swarm with these tiny birds darting hither and thither. A skilled birder could count on identifying dozens of species on almost any morning during peak periods.

I still love to seek out warblers with their fresh spring plumage, but it has been a long time since the numbers to be found approached those seen routinely in my early birding years.

Warbler numbers are one of the little-noticed casualties of habitat loss in breeding and wintering areas and along migratory routes. It is a saddening personal loss for me and a danger signal that ought to be heeded.

Birds still sing in the eastern woodlands each spring, but often the common residents form the chorus. The flourish of warblers is diminished.

My father's sense of loss supports statistics showing declines for as many as three-quarters of neotropical migratory songbirds all along the Eastern Seaboard and stretching into the Midwest.

Who else was paying attention to document these trends? Starting in the spring of 1966, the U.S. Fish and Wildlife Service organized volunteer birders to count birds by sight and song at 50 stops every half-mile along roads. Today, more than 3,000 permanent routes nationally compose the Breeding Bird Survey.

Birders follow the Breeding Bird Survey routes each spring as faithfully as the migrants themselves trace their own pathways. Years of careful counting are revealing alarming decreases in eastern migrant populations over the past 40 years.

For example, from the 1940s to 1980s, there was a 50% decline in populations of mid-Atlantic migratory songbirds and many species dropped off certain breeding bird routes altogether.

Scientists studying why the eastern migrants are declining while resident birds are not have pinpointed two main causes: the fragmenting of forests into small chunks and the accelerating destruction of the tropical forests of Mexico, Central America, and the Greater Antilles.

A famous ecologist, Aldo Leopold, called for "saving all the pieces" if we are to understand the whole. But what size pieces should we be keeping? Imagine knocking over your favorite vase and seeing it shatter into a hundred shards. What if the vase broke

Partners in Flight

"Partners in Flight—Aves de las Americas" names an international program comprised of government agencies and conservation groups throughout the Americas dedicated to migratory bird conservation. Research, education, and international partnerships are blossoming since the inception of this program in 1990. Montana's own Partners in Flight group brings together professional biologists and amateur birders alike. What better way to span political boundaries than on the wings of birds whose homes lie in two countries?

into only four large fragments? At least the vase is recognizable, and can be glued together.

In the same way, human activities are fracturing eastern forests into shards scattered among roads, fields, and buildings. Birds adapted to a secluded life in the heart of a forest must now nest too close to its edges, where they may be exposed to nest predators and a brood parasite, the brown-headed cowbird.

JAN L. WASSINK

Cowbird egg in western wood pewee nest

Cowbirds lay their eggs in the nests of other birds for them to tend. These plains natives once feasted on insects found in grasses grazed by bison herds. Depositing their eggs for others to raise suited a nomadic lifestyle. Today, they have proved their versatility by following cattle and cleared lands east and west. Where once the cowbirds had 50 bird species as hosts, now they have more than 150.

By comparison, studies of the remaining forests show migrants thriving in preserves like the Adirondacks and Great Smokies. These woodlands are still large enough for the heart-of-the-forest birds to nest and feed safe from predators and cowbirds.

For some species, conserving great chunks of forest may not prevent further decline. Their winter homes in the tropics are disappearing under the chainsaw and match. In fact, the logging of tropical forests and the corresponding decline of eastern warblers drew a public outcry and rally to "save our songbirds" in the late 1980s. Once researchers started investigating, they discovered that the problems lay at both doorsteps in the Americas.

The birds with the choosiest diets and nesting needs face the greatest dangers. When their home vanishes, the specialists have nowhere to turn. One of the world's rarest birds, the Kirtland's warbler, nests only in young jack pine forests in central Michigan. However, decades of wildfire suppression prevented young forests from sprouting. Land clearing for agriculture encouraged cowbirds to multiply. By 1971, only 200 warblers returned from wintering grounds in the Bahamas.

Despite an intensive program of burning and cutting older jack pine forests to make way for seedlings, the Kirtland's warbler faces an uncertain future. Even trapping cowbirds is necessary to ensure enough nestling warblers survive. Once any species teeters on the brink of extinction, the risks and costs are inescapably high.

RON SPOMER

Yellow-headed blackbird

Western Migratory Birds: A Brighter Picture?

Does the story for eastern migratory birds hold true in the West? Breeding Bird Survey data from the western half of the United States shows startling differences.

Records from 1966-85 suggest declines in 37 species of birds, either across the region or locally. As a group, however, neotropical migratory birds in the West appear to be better off than

"There can be no purpose more enspiriting than to begin the age of restoration, reweaving the wondrous diversity of life that still surrounds us."

—E.O. Wilson

JAN L. WASSINK

Mountain bluebird

their eastern counterparts. Large tracts of public land and fewer people add up to greater breathing room for birds. (Montana's entire population—840,000 people—could fit in a mid-sized eastern city.)

But the very factors that favor our birds also contribute to a lack of knowledge. Fewer birders must work harder to keep track of birds over an enormous landscape.

Scientists hesitate to draw too many conclusions until we know more of the story. Changes imposed on the Montana landscape may not be as dramatic as a megalopolis stretching from Boston to Washington, D.C. However, we have altered our state in complex ways.

With the Sky on Their Backs

Our understanding of the 144 migratory land birds that nest in Montana, as well as the additional 115 resident species, falls far short of our ability to alter and populate the land.

Consider that the biology of fewer than 10% of the 1.4 million species discovered on Earth is known. Yet, our spark of knowledge has illuminated the life-saving roles of several inconspicuous species. Who could have dreamed that a flower from Madagascar called the rosy periwinkle would offer a cure for Hodgkin's disease and childhood lymphocytic leukemia?

Such discoveries link human health to preserving the full spectrum of species sharing the planet. Henry David Thoreau once wrote, "The bluebird carries the sky on its back." Pondering these words, I see the indigo sky always present in the feathers of a migratory bird. And I imagine, too, the bones of a bird light enough to stay airborne and strong enough to hold up the sky. I am humbled in the presence of lightness coupled with strength.

Research Takes Off

ZED RUHLEN

Graciela Mandujano Chavez came to Montana for a summer as part of a Mexican internship program to learn new research techniques to take back to her country. The program, sponsored by Partners in Flight, is just one way to tackle the lack of funding for bird research in Mexico. "It's easier to work together," Graciela said. "We need to be like the birds. They don't recognize borders."

A July Morning at a MAPS Station

I held a northern waterthrush between thumb and finger and let him go. Liquid black eyes shone beneath a buffy eye-ring. A blur of feathers vanished into shadows.

Concern for the welfare of neotropical migratory birds explained why biologists weighed, measured, and banded birds for a series of summer mornings at Lee Metcalf National Wildlife Refuge near Stevensville. They moved swiftly to untangle birds from mist nets spread like spider webs between the trees. Irrepressible exclamations punctuated technical talk. There was the unexpected beauty of cinnamon feathers tucked on the underside of a catbird and the electric blue of a lazuli bunting. Most birds seemed to patiently endure the checkup, except for a squawking sapsucker and a cowbird whose beak packed a wicked jab.

One of several such summer stations in Montana, MAPS (monitoring avian productivity and survivorship) helps researchers trace the health of long-distance migrants. The Forest Service, U.S. Fish and Wildlife Service, Confederated Salish and Kootenai Tribes, and FW&P all cooperate to run MAPS stations.

Birds at Every Point?

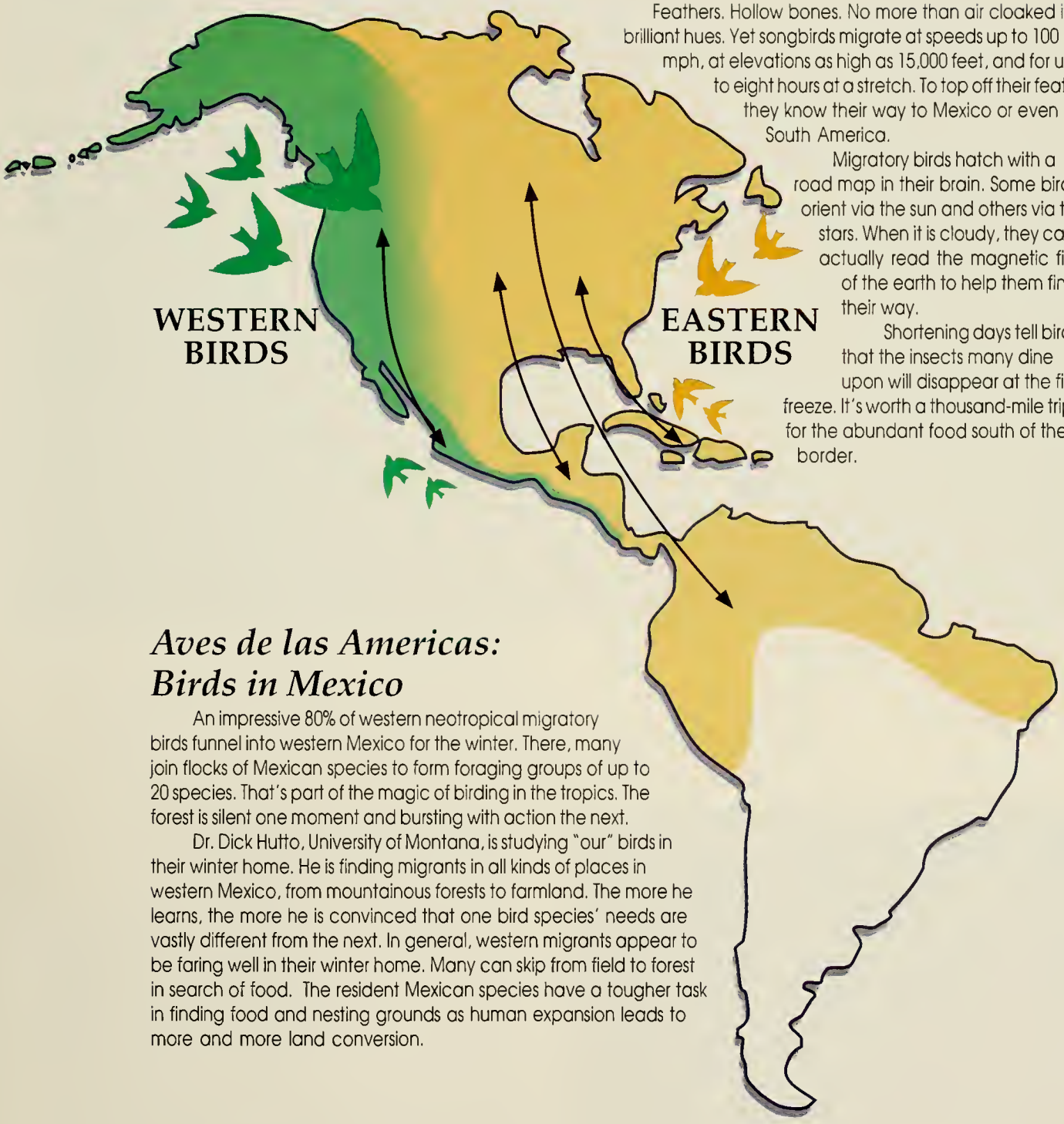
Here are the rules. You are outdoors and standing still for a specified time. You write down all the birds you hear and see in those few minutes. Then, you move on to the next point. Do you want to give it a try?

The Forest Service has set up point counts on every Montana and Idaho national forest to track population trends. FW&P biologists run counts in northwestern Montana to test the effects of big game habitat management on migratory birds. The Salish-Kootenai Tribe has added two new potential breeding bird survey routes to better sample western Montana grasslands.

CHRIS PAIGE

Louise Seguela records bird observations by sight and sound in Montana's Gravelly range on the Beaverhead National Forest.

Migration Miracles



Feathers. Hollow bones. No more than air cloaked in brilliant hues. Yet songbirds migrate at speeds up to 100 mph, at elevations as high as 15,000 feet, and for up to eight hours at a stretch. To top off their feat, they know their way to Mexico or even South America.

Migratory birds hatch with a road map in their brain. Some birds orient via the sun and others via the stars. When it is cloudy, they can actually read the magnetic field of the earth to help them find their way.

Shortening days tell birds that the insects many dine upon will disappear at the first freeze. It's worth a thousand-mile trip for the abundant food south of the border.

Aves de las Americas: Birds in Mexico

An impressive 80% of western neotropical migratory birds funnel into western Mexico for the winter. There, many join flocks of Mexican species to form foraging groups of up to 20 species. That's part of the magic of birding in the tropics. The forest is silent one moment and bursting with action the next.

Dr. Dick Hutto, University of Montana, is studying "our" birds in their winter home. He is finding migrants in all kinds of places in western Mexico, from mountainous forests to farmland. The more he learns, the more he is convinced that one bird species' needs are vastly different from the next. In general, western migrants appear to be faring well in their winter home. Many can skip from field to forest in search of food. The resident Mexican species have a tougher task in finding food and nesting grounds as human expansion leads to more and more land conversion.

Backyard for the Birds

To transform your backyard into a mecca of native plants for songbirds, butterflies, and wildlife viewers, first consider the four basic needs of life:

1. Food—seeds, berries, flower nectar.
2. Water—bird baths, drip faucets, a pond or a puddle.
3. Shelter—trees, shrubs, brush piles, rock walls, hollow logs.
4. Space—corridors, open space, refuge.

Another tip comes in the form of an equation: variety plus edge plus layering equals diversity. That means you should mix plant species, create uneven borders, and plant in layers, from ground cover to the tallest trees. Take note of prevailing wind directions and sun when deciding which plants to choose.

By selecting native species, you will offer the best kinds of food and shelter for migratory birds. These plants are also adapted to our soils and climate, and require less care to thrive.

Just think, in addition to playing a role in conserving migratory songbirds, there's the bonus of trading the hours once spent mowing for leisurely birdwatching!

Want More Details?

Order a backyard wildlife habitat kit for $2 plus postage from the National Wildlife Federation: 1-800-432-6564. The kit also tells you how to enroll your yard as a certified backyard habitat. The library, extension office, and nurseries selling native plants are also excellent sources for deciding which plants will thrive in your part of the state.

Here's an example of planning a backyard for the birds. Simply sketch in your house, yard, and all existing outdoor features, from trees to boulders. Then take tracing paper and draw in the shrubs, trees, hummingbird plots, and whatever else you can envision. Let your imagination run wild....

Feeding Hummingbirds—Naturally

Calliope and rufous hummingbirds in the western part of the state will love these Montana natives:

Wild beebalm	Pineleaf penstemon
Scarlet gilia	Firecracker penstemon

Cat Woes

Our purring pets can be deadly for birds trying to get a meal or raise a family. By placing bird baths high off the ground and feeders close to cover, you can help birds elude the stealthy house cat. Best of all, keep cats indoors.

BETSY SPETTIGUE

Look for these binocular signs dotted along Montana highways that mark the more than 100 sites in the Montana Wildlife Viewing Guide.

Birdwatching Basics

Binoculars are as essential to birding as a flyrod to flyfishing. A standard size for birding is 7X35.

A field guide is the proper companion to binoculars. Several ace Montana birders swear by the *National Geographic Field Guide to Birds of North America*. Slip in "A Checklist of Montana Birds," available from most FW&P offices, and you're ready to keep track of your own sightings.

One of the best ways to master birding is to join a field trip offered by a local Audubon chapter. You'll pick up pointers to apply on your own.

Finally, please heed this advice from Yellowstone National Park biologist Terry McEneaney: "Anyone can watch birds, but the real test of a responsible birder is to observe birds without disturbing them."

TOM J. ULRICH

Cassin's finch

A Bird's Eye View of the Montana Landscape

The history of Montana's mountain ranges, prairies, and winding rivers traces back a billion years. It's a story of a state that, as geologist David Alt describes it, "got scrambled in a long and grinding collision with the Pacific Ocean."

Without this shifting, buckling rodeo of geology, Montana would be devoid of many of the birds we see today—species that frequent habitats ranging from valley floors as low as 1,800 feet all the way to the highest mountain in the state, 12,799-foot Granite Peak in the Beartooth Range.

Climate, too, plays a role in the bird life we see. In the shadow of the Northern Rockies, paleontologists expose the bones of the ancestors of birds that once flew through lush tropics. The peaks of the Bob Marshall Wilderness, far above the diggers of bones, bear the marks of glacier-gouging a mere 10,000 years ago. Today's climate of mild summers and sometimes bone-chilling winters dictates the comings and goings of our birds.

The osprey along the river, the tanager in the pines, and the curlew in the grasslands symbolize three of the most easily identified habitats in Montana. Exploring each place can be as thrilling as travel to another country.

The Gift of Water: Riparian Riches

Habitat Highlights

Cottonwood, alder, red-osier dogwood, and willow belong to the edges of many of Montana's streams, rivers, marshes, and lakes. Within this verdant tangle of water-loving trees and bushes live more of Montana's neotropical migratory birds than in any other habitat. That's a staggering fact when you consider that this waterside corridor, called "riparian," makes up only about 1% of Montana's habitats. Riparian lands can vary from ribbons of green threading through the plains to broad floodplains of cottonwoods by the banks of the Flathead, Bitterroot, Clark Fork, Kootenai, or Yellowstone rivers.

The Habitat-Bird Connection

Just as an apartment can house more tenants than a one-bedroom home, so the trees and shrubs in a riparian zone host a medley of birds. These layers of vegetation also offer distinct kinds of foods, according to height and distance from water's edge.

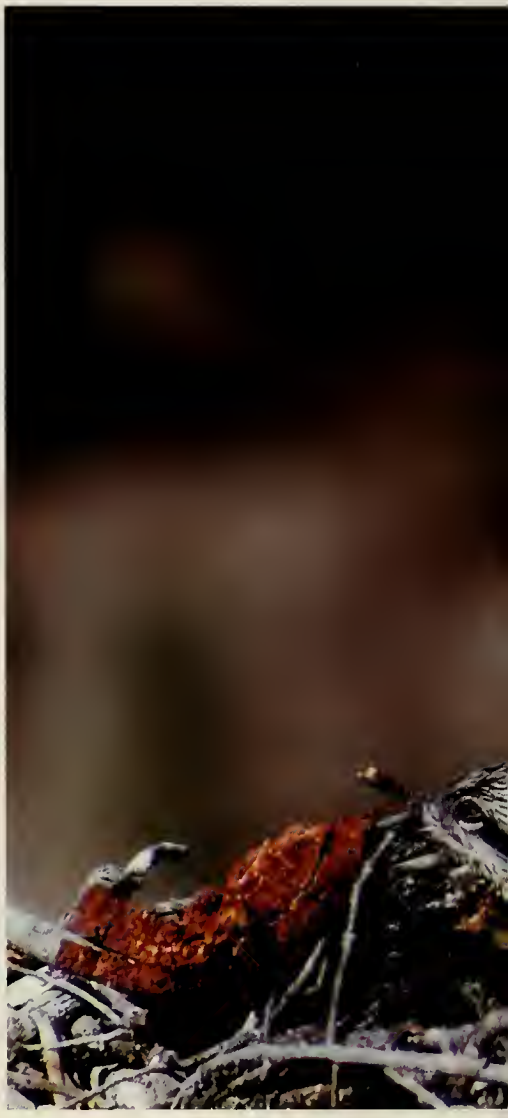
MARK LAGERSTROM

Belted kingfisher

A Sampling of Neotropical Migratory Birds

The osprey surveys the lower Flathead River from the branch of a dead tree. A belted kingfisher zings downstream low to the water, its clattering call drowning out warbler songs from streamside trees. There, American redstarts and yellow warblers sparkle in the early morning sunshine. The alders rustle with birds chasing insects, gathering nesting materials, and setting up territories for the summer nesting season.

Birds have mastered special strategies for catching insects in treetops or thickest shrubbery. If you watch patiently you might detect birds chasing insects on the wing, hanging upside down from a limb, or stretching upward to snatch a fat caterpillar.



Ospreys

Yellow warblers

The most visible sign of ospreys is their giant, bulky stick nests on top of dead trees, or on platforms constructed above telephone poles. The same nest may be used each year for decades, and every year an osprey pair adds a few more sticks. One nest weighed half a ton.

HARRY ENGELS

TOM J. ULRICH

Amazing Bird Fact

The yellow warbler lives its life at the edge of riparian lands, and so does the brown-headed cowbird. But this spunky bird has evolved with cowbirds. Too tiny to toss a cowbird egg out of her nest, the warbler simply builds a new nest on top of the old one, burying the cowbird egg (and sometimes her own). Then, she'll try again. One warbler built a six-story nest.

Conservation Notes

Every layer—from shrub to tallest tree—of this small, yet vital habitat is home, feeding ground, or shelter for some neotropical migratory bird. Yet, flood control and grazing have transformed miles of riparian areas. Where once there were thickets, we now see parklike stands of old cottonwoods. These trees depend on natural flooding to send up new shoots. Extensive grazing by livestock in riparian areas also rids the zone of young trees and shrubby thickets. Cowbirds, too, are expanding their range into the heart of riparian areas, where birds lack the yellow warbler's ability to defend themselves from nest predation. Restoring riparian areas will benefit songbirds and the health of our streams and rivers.

Watchable Tip

The best time to experience the dawn music of riparian birds is early morning in May and June. Try sitting still with binoculars in hand, searching for birds at all levels. While focusing on the warbler at eye-level, you might miss the bald eagle perched above you.

The name "tanager" comes from the language of the Tupi Indians of the Amazon region, who called it "tanagaras." The Chinook Indians of the Pacific Northwest called the bird, "Ik Kok Koot." This bright denizen of the woods spans both worlds and cultures!

RICK & NORA BOWERS

Female western tanager

In the Shadow of Trees: Forest Forays

Habitat Highlights

The evergreen forests shrouding Montana mountains differ from one another, depending on elevation and rainfall. One mountain may yield dense stands of Douglas-fir and larch on a north flank and open ponderosa forests on its south flank. Climb higher and the forest shifts to lodgepole pine, and finally to whitebark pine, twisted by buffeting winter storms.

Fire shaped all but the wettest Montana forests. Great sweeping fires like the Yellowstone burn of 1988 or crackling, low flames beneath stands of old-growth ponderosa pines are as natural here as rainfall to the redwoods of California.

A Sampling of Neotropical Migratory Birds

Sharp-shinned and Cooper's hawks navigate through fir trees on rounded wings in pursuit of small mammals and birds. The western tanager hides behind a shield of pine needles. A solitary vireo whistles. Yellow-rumped warblers pluck insects from tree limbs at eye level. A western wood-pewee zips out from its exposed perch on a dead branch to nab a mosquito.

The Habitat-Bird Connection

The western tanager flits across forests, apparently content to sample insects, fruits, and buds from all kinds of evergreens, especially within centuries-old ponderosa and Douglas-fir forests. Dr. Sallie Hejl, Forest Service researcher in Missoula, is comparing birds in old-growth and logged forests of Montana and Idaho. Preliminary results point toward old-growth forests as favored homes for other migrants besides the tanager: Swainson's thrush, Townsend's warbler, Hammond's flycatcher, and the brown creeper.

A trek through a burned forest can lead to surprises. You'll find more mountain bluebirds, olive-sided flycatchers, and chipping sparrows among these stark skeletons of trees than anywhere else. If you've never seen a black-backed woodpecker, look for this resident hopping up the side of a tree, blending in perfectly. These blackened trees are smorgasbords of tasty insects adapted to fire cycles.

Amazing Bird Fact

Pine siskins are both Montanans and neotropical migrants. Some fly south of the U.S. border and others remain. But all of these inconspicuous birds are roamers at heart. In fact, they search for insect outbreaks in the summer. Spruce budworms provide easy pickings for a siskin. In turn, the tiny bird helps the trees shake themselves of these needle-nibbling caterpillars.

Conservation Notes

Years of fire suppression and logging have altered the natural patterns of

JAN L. WASSINK

Swainson's thrushes

RICK & NORA BOWERS

Warbling vireo

TOM J. ULRICH

Yellow-rumped warbler

western forests. Losses of old growth, snags (dead trees), natural burns, and interior forests signal trouble for our songsters.

The complexity of the lives of forest birds should send a message of humility in our attempts to manage forests. The best stewardship for birds harmonizes with the cycles of fires, droughts, insect outbreaks, and floods.

Watchable Tip

Forests are trickier than riparian areas for birdwatching. You may hear the thin trickle of singing in the treetops and never see the golden-crowned kinglets. Find a small clearing in the forest where you can easily watch for rustles in high or low tree branches. Birds sing in the forests most spring mornings, evenings, and often just before it rains.

A Stark Beauty: Grassland

ALAN G. NELSON

Ferruginous hawk

Short-eared owl

Habitat Highlights

Vast stretches of grasslands ripple across central and eastern Montana, encircle island mountain ranges, crumple into badlands, and spread smooth as icing to distant horizons. Woody draws of green ash trees burst from creases in grassy hillsides as if by accident. The Great Plains are lands of little rain, winds, extremes of heat and cold, and a spare beauty. "Grassland" can be loosely defined as native shortgrass (the dominant kind native to Montana), palouse, and tallgrass prairies; range lands, weedy fields, farmlands, prairie dog towns, sagebrush plains, and alpine plateaus.

Sampling of Neotropical Migratory Birds

The long-billed curlew settles down on a nest and vanishes into the stubby grasses. Her colors are those of her summer home.

The fragrance of sagebrush melds with the songs of sparrows—sage, vesper, Brewer's, and lark. Eastern and western kingbirds perch on tall shrubs. Rufous and calliope hummingbirds hover over wildflowers.

Life in a prairie dog town is a story not just of mammals, but of ferruginous hawks hunting overhead, burrowing owls perched on dirt mounds, and rare mountain plovers pursuing grasshoppers.

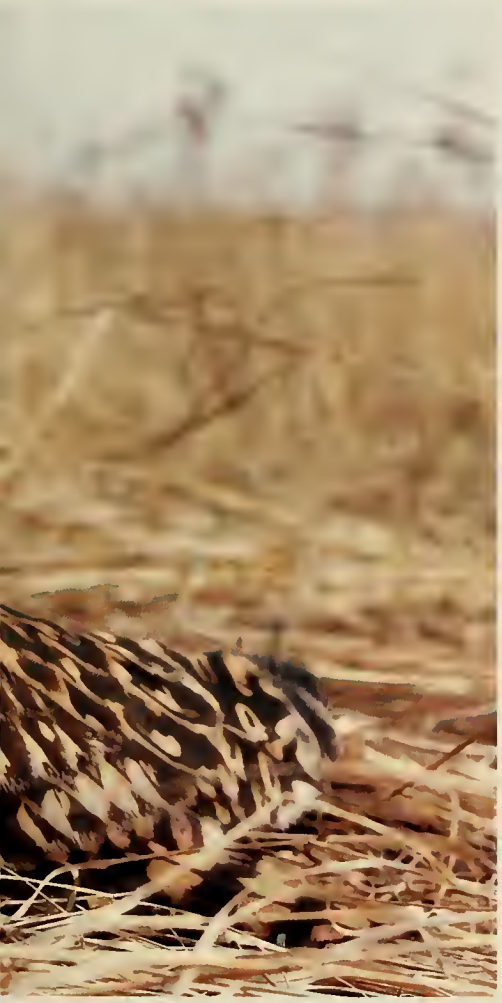
Music spills from the woody draws by late May. Joining the singing fray may be as many as 12 species of warblers, as well as red-eyed and warbling vireos, lazuli buntings, hermit and Swainson's thrushes.

High on the Beartooth Plateau at 10,000 feet, a peregrine falcon arcs across the sky, a water pipit pecks insects from the tundra, and a broad-tailed hummingbird sips from Indian paintbrush.

Habitat-Bird Connection

Birds of prairie grasslands evolved with drought, fire, and grazing by millions of bison that wandered an infinite landscape and left huge stretches of grazed and ungrazed lands in their wake. Fire helped sculpt this grand mosaic. Thus, some species like the long-billed curlew and the horned lark favor open areas created by grazing or fire, while others like the northern harrier and short-eared owl rely on shaggy, high grasses and shrubs to hide their nests. Even among similar birds, there can be tremendous differences. Take sparrows. While the lark sparrow can fare well in

Grandeur



ERWIN & PEGGY BAUER

ALAN G. NELSON

Long-billed curlew

The largest bird in the sandpiper family, the long-billed curlew was a common sight across the plains until much of its native habitat fell to the plow. In Montana, the curlew still finds refuge in the open plains.

ALAN G. NELSON

Rufous hummingbird

ALAN G. NELSON

Lazuli bunting

grazed lands, the Baird's and savannah sparrows decline if they cannot find the lush grasses of ungrazed prairie.

Amazing Bird Fact

As the sun sinks over the open hillside, the nighthawks begin their aerial dance. They dart through the sky on slender wings, calling *peeeent...peeent*. They fly with gaping mouths, gulping winged insects of all sizes. A common nighthawk can consume 500 mosquitoes in one evening. With that much protein, no wonder this streamlined bird can migrate all the way to South America for the winter.

Conservation Notes

More migratory bird species are on the decline in grasslands than in any other Montana habitat. Our native prairies have dwindled in Montana and elsewhere in the West. The livestock that have replaced bison graze differently, leaving fewer homes for birds that seek the shelter of tall grasses. There are other factors at work too: converting prairie to farmlands, widespread spraying to eradicate grasshoppers, eliminating prairie dog towns, the spread of exotic weeds, and reducing natural fires.

What's the answer? The birds at risk need healthy native vegetation. Fire should play its renewing role once more. Finally, we need a greater understanding of the interwinings of grassland communities, from the microscopic lives in the soils to the burrowing owl blinking in the brilliant eastern Montana sunshine.

Watchable Tip

As you drive through the windy plains, look for kestrels, shrikes, bluebirds, and meadlowlarks perched on fences or fenceposts. Search for the green clumps of trees in draws that signal oases for migrating songbirds in the spring. Take a walk in the wind and gaze at the sky for soaring hawks. Watch underfoot for the sudden burst of a horned lark or a flock of sparrows. Walk with care to avoid disturbing ground-nesting birds in spring. Spend some time at a prairie dog town, observing from a distance. You can find the towns by the mounds of dirt that resemble a baseball playing field gone wild.

A Passion for His Profession:

Dr. Phil Wright: Educator and Naturalist

A Harris' sparrow joins the song sparrow outside Phil Wright's Missoula home next to Rattlesnake Creek. Our interview stops momentarily. Phil hands me a pair of binoculars. Under his coaching, I can see that the bird is larger than the song sparrow and yes, the partial black shows its youth.

BILL THOMAS

Phil Wright

Always a teacher, Phil lighted a spark for thousands of college students over a 38-year span of teaching ornithology and an additional 8 years of mammalogy at the University of Montana, from 1939 to 1985.

"He was extremely energetic and it rubbed off on his students," recalls former student Terry McEneaney, now bird biologist for Yellowstone National Park. "His courses were tough, because he felt they had to be for us to learn. He believed that the more broadly educated we were, the better decisions we would make on our own."

Phil's zeal for birds traces back to his childhood in New Hampshire and a great uncle who was an amateur naturalist. He went on to study birds of the Isle of Shoals through the University of New Hampshire for a master's degree and earned a Ph.D. from the University of Wisconsin.

Whether teaching, adding to Montana's wealth of bird knowledge, or training for a cross-country ski race, there's nothing halfway about Phil's approach to living. Today, he is compiling rare bird records for publication and serving on a verification committee for new sightings in Montana. He is actively involved in Boone and Crockett Club affairs, and recently received the Montana Chapter of The Wildlife Society's Distinguished Service Award. The day we spoke he had just returned from his sixth year of skiing the 25-km West Yellowstone race.

He challenged his students to go after their professions with similar enthusiasm. Who were his best students in all those years? "I had hundreds of them," Phil says without hesitation.

"I worked hard to make everything about birds interesting," says Phil. He believed that to teach well, he had to know birds and mammals intimately.

"You try never to misidentify a bird and then have to backtrack," he says. He's a stickler for accuracy. His students learned the art of spotting the critical details about each bird that all added up to its positive identification.

As he approaches his 80th birthday this month, Phil still sees more details in the world around him than most 20-year-olds. His advice on living applies to people of all ages: "As you get older and tend to forget things, you've got to keep your mind active. You can't sit in front of a TV set all day and expect to stay sharp."

Just as I'm leaving, Phil rummages in his office where papers, books, and ski medals surround a Macintosh computer. He pulls out a plaque from the Wildlife Club that says "To Phil Wright, Naturalist and Educator." But the phrase he wants me to see refers to his "ageless pulse."

"That was in 1977," he chuckles.

Birder's Library

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"A Checklist of Montana Birds": Montana Dept. of Fish, Wildlife & Parks (available from regional offices or Helena headquarters, 1420 East Sixth Ave., Helena, MT 59620).

For additional information or reprints of this article contact your local National Forest Service office or The Montana Department of Fish, Wildlife & Parks, 1420 East Sixth Avenue, PO Box 200701; Helena, MT 59620-0701, 406/444-2535.

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Montana Fish, Wildlife & Parks

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

Brittany Schendel—first place

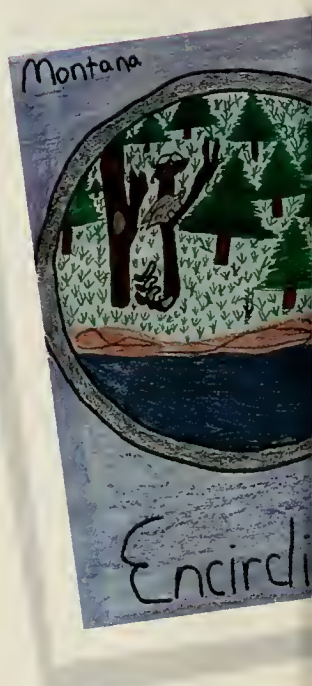
State Parks Are For Families

by Debbie Cheek

This spring, the Parks Division of the Department of Fish, Wildlife & Parks conducted its third annual State Parks Poster Contest for fifth grade students. This year's theme—"state parks are for families"—inspired an array of colorful, creative posters from youngsters all across Montana. In April a panel of five judges selected the winning entries.

Brittany Schendel, a student at the Roy C. Swan Elementary School in White Sulphur Springs, won the top award with her poster portraying two "families" enjoying Montana State Parks—a human family and an ant family.

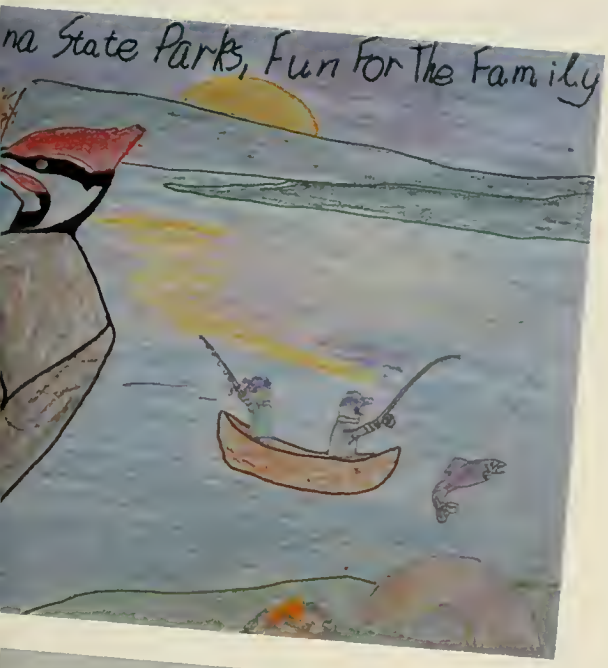
Michael Williams—tied for second place



Two young artists tied for second place: **Michael Williams** from the Broadus Elementary School and **Josh Dierman** from the Eureka Elementary School. Michael's poster illustrates the wide variety of activities a family can participate in while visiting the parks, while Josh's poster gives us a closeup view of a wildlife family and a human family appreciating the joy of a special "catch."

The judges also found the third place entries too close to call; they declared a tie between **Kyle Cunningham** from Roy C. Swan Elementary School in White Sulphur Springs and **Raina Dawn Phillips** from the Eureka Elementary School. Kyle's poster reflects on a family float trip down the Smith River near his home, while Raina's shows us that through the glass of binoculars at Wild Horse Island one can see many "families" encircling Montana State Parks.

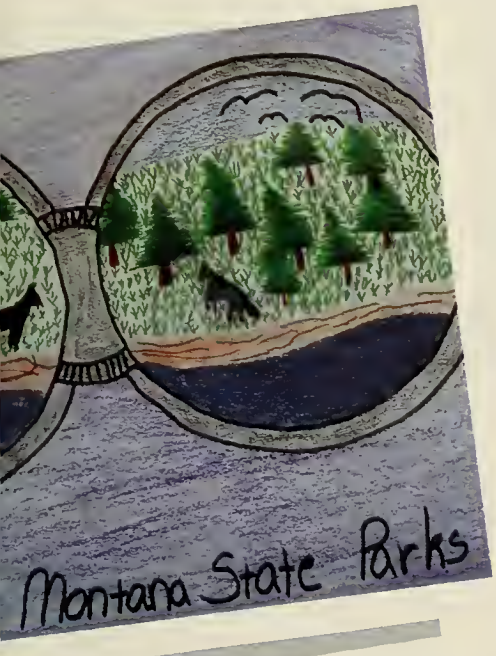
Two posters were chosen for honorable mention and both students, **Elyn Heyn** and **Ricky Brown**, are from the Eureka Elementary School.



Josh Dierman—tied for second place

The first place winner received a $150 savings bond, second place winners $100 bonds, and third place winners $50 bonds. All contest participants received T-shirts and magnets with the winning poster design screened on them.

The winning entries have already been displayed in Helena and Bozeman, and will be on display at FW&P regional headquarters during the following times: Missoula, 6/27 to 7/15; Great Falls, 7/18 to 8/5; Billings, 8/8 to 8/26; Miles City, 8/29 to 9/16; Kalispell, 9/19 to 10/7. ■

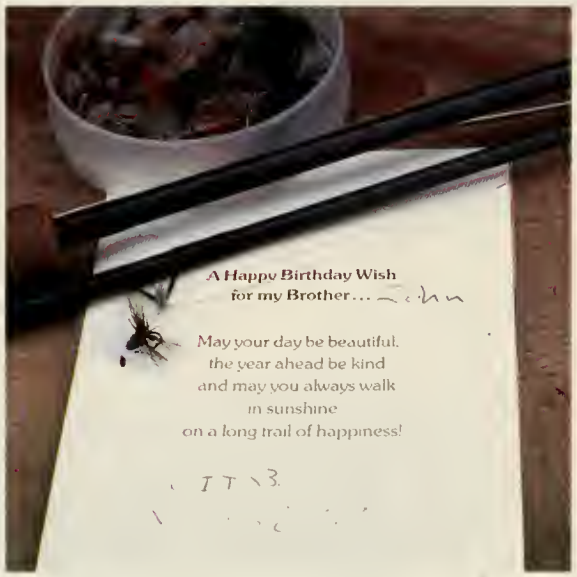


Raina Dawn Phillips—tied for third place

Kyle Cunningham—tied for third place

The Birthday Fly

by JOHN HAVILAND


A Happy Birthday Wish
for my Brother...
May your day be beautiful,
the year ahead be kind
and may you always walk
in sunshine
on a long trail of happiness!
JOHN HAVILAND

I found a birthday card from my oldest brother last week in a shoe box full of old letters. Inside the card was a No.14 Renegade fly, flattened from 16 years of storage. I remembered my brother had tied the fly so I would hike into a mountain lake above town and go fishing. The fishing was to be my birthday present. For one reason or another I had never fished with the fly.

My brother moved away the year after the date on the card. As the years passed, the visits and phone calls dwindled. I started to pitch the card and flat fly, but instead I put the card back in the shoe box and the fly in the chest pocket of my fishing vest. Maybe if I fished the Renegade for rainbow and brown trout in the Clark Fork, the years would narrow.

A few days later I parked across a bridge in the shadow of a side canyon to the river. The thermometer mounted on the dash of my pickup read 93 degrees. Small water and a cool breeze flowed out of the mouth of the canyon. I sat on the tailgate of the pickup to pull on my chest waders.

As is always the case, the other side of the river looked better, so I walked back across the bridge. The slide down the bank roiled a hot dust. The water was cool and clear from Rock Creek, whose mouth flowed in around the bend upstream. Rock Creek is a famous "blue ribbon" stream for fly fishermen of means. All the guides on Rock Creek carry business cards.

The edge of the Clark Fork flowed ankle deep up in the willows. I whipped the rod back and forth in the air to get some line through the guides. The Renegade dropped at the edge of the willows. A fingerling rainbow swam out of the stems and bit at the white of the fly. I pulled the fly away and put it back on the water a length of line farther up. Another little trout took the fly, by the hook this time. I released the trout and it swam back to the willows.

I waded into the shade under a cliff on the south side of the river. The water pressed up my legs and around my waist. After two casts to find the range, the fly fell in a mess of leader where the fast water slipped past the slow. A rainbow came up for the fly anyway. The trout was big enough to take some line.

Upriver now, the water was deep right up to the shore. In the middle of the river the yellow ellipse of a feeding brown trout broke the surface. I have never been much good at casting for distance *or* accuracy, and never for both at once. My first attempts landed short. Finally the Renegade landed upstream from the rock that broke the current for the brown. The fly slipped around the near side of the rock and skated across the slack water behind the rock. But the fish never showed. The fly floated out of the trout's narrow feeding lane.

I decided to try it one more time, then look for a more accommodating trout. People and trout only expend so much energy for something they want. If whatever it is we want goes on by without us, we hope something easier will come along the next time.

With an arm's-length more line on the next cast, the fly landed above the rock with an arc of line laid out upstream to give the fly a natural carry. The fly poured around the near side of the rock then stood still in the window of calm water. I felt the fish come up. Instead of taking my easy fly, though, he brushed it aside with his head. He did not like the strings attached.

Oh, what the heck, one more cast wouldn't hurt. I stripped more line off the reel in hopes of mending the line so the fly would hold a moment longer behind the rock. The extra line was enough to catch the fly in the branches of a cottonwood behind me. The fly was hooked in a dead branch 15 feet up. Dead branches don't bend and the leader broke at the clinch knot. The fly was gone. But at least I had used it.

My brother would have laughed after the first poor presentation and gone on up the river. He enjoys everything about fly fishing. He likes missing a fish almost as much as catching one.

The sun was down all around now. If my brother had been there he would have just now started to fish. He would already have a Muddler Minnow tied on.

Before he moved to Colorado he lived along the Bighorn River. He fished at night by the moon when the river was quiet. As he went down to the river at dark he met other fishermen coming back to their cars and loading their drift boats. They looked with suspicion at his simple gear of tennis shoes and wallet of flies in his shirt pocket.

My brother was the same as the browns he hunted. He swam back and forth across the river to the best fishing, with one arm paddling and the other holding up his rod like a spar. He pulled a Muddler or Bighorn Special across the shallow water to the browns that had come out to feed after a day of fasting in the deep away from the whipping of correctly clad anglers.

The week I drove down to spend with him on the Bighorn the fishing was slow. He wanted me to catch some big fish on his river, but the rainbows and browns did not cooperate. Wading around in the dark where a cold-water casket was a step away was not my idea of entertainment, so we floated the river during the day and quit fishing at dark.

At sundown one evening, I finally caught a good brown that had come up to the edge of shallow water. The trout lay clean, beached in the pebbles of the shore. It started to writhe, its head and tail digging into the mud beneath the gravel. My brother came over to touch the fish. He held the fish in calm water by the tail and belly before he let it go back to the river. He held it like you would to teach a baby to swim. I had never held a fish like that. It either went straight into the bag or back into the water.

> The head of a long trout rose to the surface in a piece of still water the size of a kitchen sink. I timed his rises, counting slowly to twelve between each one. When he slurped something off the surface, I counted to ten, then put the fly right where he should have wanted it.

At the time it seemed important to my brother that I catch a big trout, or so I thought. Looking back on the trip now, though, he wanted me to catch a large trout so I could enjoy the fish and then the fishing.

One evening when he still lived at home we fished the headwaters of the Clark Fork. I tired early and sneaked up the river to spy on him. I stood back in the trees and watched. Billy always used a dropper fly tied with a snake knot three feet above his Muddler. He stood waist deep in the water, his rod held high and out. The black dropper fly fluttered above the water, every so often it touched. The Muddler followed its every move. A little brown repeatedly came for the dropper fly, but my brother danced the fly up out of its reach. He enjoyed playing with that little fish. As he let the line back down a saw of teeth took the Muddler. Billy gave the fish all the line it wanted. When the play was over he turned serious and brought the brown onto the gravel.

Now, back on the Clark Fork by myself, instead of a minnow to replace the lost Renegade, I tied on a Charlie Special with a parachute for the last of the daylight. I held the tippet and fly up to the light of the skyline to tie on the fly the way Billy always did. I liked the way the knot slid together tight under the pressure of my thumbnail.

The backs of fish broke the surface behind the riprap of the bank, farther upriver. I walked along the top of the bank to stay out of the rocks. An open hayfield behind allowed me to

Illustration by Dan Coughlin © 1994

cast the distance down behind the rocks. A bit of a tail wind helped.

Two small rainbows took the fly and I had to climb down each time to let them go. Still I liked doing it. Little fish are better than no fish.

The head of a long trout rose to the surface in a piece of still water the size of a kitchen sink. I timed his rises, counting slowly to twelve between each one. When he slurped something off the surface, I counted to ten, then put the fly right where he should have wanted it. The big rainbow ignored the Charlie Special. I ruined any chance he would take the fly when I dragged the line across the water to make another cast. Next time I would have to be more careful.

The night was dark enough now for a Muddler Minnow. From where I stood I cast the Muddler up and across the current and stripped in line when the fly swung in close to shore. The line pulled tight. The fish put a good bend in the rod trying to go downstream. I worked him in. A rainbow with a pug nose planed in the rush of water at my legs. Maybe it was 14 inches.

My brother came over to touch the fish. He held the fish in calm water by the tail and belly before he let it go back to the river. He held it like you would to teach a baby to swim.

I walked back down the river to the big brown. A whitetail doe walked out of the cottonwoods to the river. It stopped to drink then walked back under the trees.

The brown had come out from behind its rock. A triangle of tail moved across the light reflected off the river. The fish hit the first offer as the Muddler skipped across the top of the water. The power of the fish came up the line and down the rod into my fingers. I let out a few feet of line. Then for some reason I pinched the line. I wanted the fish to go my way. We fought close for a long 30 seconds. The fish came onto the surface in twists and tore the fly out of its mouth. Everything went out of the rod, down the line, back into the water.

I should have given the trout some line, maybe a lot of it. Next time with a trout that big I would know. I had him on, just short of holding him under the belly to let him go. That's what counted.

I walked back to the bridge on the trail through the willows with the aid of a pen light. It would be midnight by the time I drove home. Long distance phone calls to Colorado are much cheaper that time of night. ■

WILDLIFE PROFESSIONALS RECEIVE AWARDS

The Northwest Section of The Wildlife Society recently honored Dr. Richard Mackie with the Einarson Award at its annual meeting in Kalispell. The Northwest Section, comprised of more than 1,000 wildlife professionals in five states and two provinces, presents this award annually in memory of Dr. Arthur Einarson, former leader of the Oregon Cooperative Wildlife Research Unit.

Dr. Mackie was recognized for his many outstanding achievements and contributions to the wildlife profession over his 33-year career. He has been actively involved in The Wildlife Society, serving as president of Montana Chapter, The Northwest Section, and most recently as president of the parent organization from 1990 to 1992. He also represented the Northwest Section on The Wildlife Society Council for two terms.

After receiving a B.S. degree from Michigan State University and an M.S. from Washington State University, Dick began his professional career as a research biologist for the Montana Department of Fish and Game. Investigation of range relationships of big game and livestock in the Missouri River Breaks of central Montana provided the basis for his doctoral thesis, which he completed at Montana State University in 1965.

After a brief stint as research coordinator for the Montana Department of Fish and Game, he served as professor of wildlife management at the University of Minnesota from 1966 to 1970. Returning to Montana, he joined the faculty in the Fish and Wildlife Program at Montana State University in 1970, where he taught until his retirement last month.

While at MSU, Dick served in numerous capacities, teaching undergraduate and graduate courses, supervising graduate field studies, coordinating research projects and other assignments for the Montana Department of Fish, Wildlife & Parks, supervising

HELEN FLATH

Dr. Richard Mackie (right) receives the Northwest Section of The Wildlife Society's Einarson Award from Dr. Bob Eng.

HELEN FLATH

Jim Cross (right) receives the Montana Chapter of The Wildlife Society's Distinguished Service Award from Harvey Nyberg.

preparation of numerous graduate theses, authoring or coauthoring many professional journal articles and monographs, and contributing to several books. Throughout his career, Dick has been an inspiration to his students and co-workers, challenging them to examine their findings beyond what is immediately obvious.—*Gary Dusek, wildlife program specialist, FW&P Region Three (Bozeman)*

Also at the Kalispell meeting in March, the Montana Chapter of The Wildlife Society presented its Distinguished Service Award to Jim Cross, recently retired wildlife manager of FW&P's Region One. This award is given once a year to honor excellence exhibited by a wildlife professional from a wildlife agency or group in Montana.

According to Chapter President Dennis Flath, Cross was an excellent choice for the award. "Jim is an outstanding example of a true wildlife professional, and it's fitting to recognize his dedication and many contributions over the course of his 28-year career."

"It's a great honor to be singled out like this among all the high-quality wildlife professionals in Montana," said Cross. "It makes me feel good about all the hard work and what I've accomplished in my career."

Cross has long been known for his expertise in wildlife management, for his dedication to wildlife habitat protection, and for his ability to forge positive relationships with other agencies, tribes, and the public. He leaves his position in northwestern Montana as the area is experiencing its best deer and elk population in decades.—*John Fraley, information officer, FW&P Region One (Kalispell)*

CELEBRATE BANNACK DAYS ON JULY 16 AND 17

Harness the team and wagon, load up the family, and head for town. That town is Bannack, Montana, and the special event is Bannack Days. Scheduled for July 16 and 17, Bannack Days unites the ghosts of the past with the present for a two-day celebration each summer. Frontier crafts, music, and

LEE GRAVIS

This year's Bannack Days celebration features frontier crafts, wagons rides, music and home-cooked pioneer food.

drama are all featured, along with a working telegraph office and wagon rides—and don't forget the home-cooked pioneer food. On Sunday morning, special church services are held in the 100-year-old church built by "Brother Van," an early-day circuit rider.

Bannack was the site of the first major gold strike in the Montana Territory and at one time boasted a population of 3,000. It can brag of having the best, and worst, of early-day citizens. Sheriff Henry Plummer had his questionable career terminated on the gallows he had built for others in Bannack—a reproduction of the gallows still stands in Hangman's Gulch.

Bannack was the site of many "firsts" for the territory: the first territorial capital, the first jail, the first hotel, the first school, and the first quartz stamping mill. Many of these buildings still stand today.

Located 25 miles west of Dillon, Bannack is easy to reach. Take Interstate 15 about 2 miles south of Dillon and exit west on State Highway 278; travel about 20 miles to the Bannack State Park sign, turn left and go 4 miles down a gravel road. You can have a unique frontier-style weekend on Bannack Days all for the $3 Montana Parks day-use fee.—*Lillian Hegstad, seasonal tour guide, Bannack State Park*

Montana State Parks Calender

JULY

Lecture Series Begins at Lewis and Clark Caverns State Park

Saturday night lecture series entitled "Exploring the Natural." Lectures begin at 8:00 p.m. in the campground amphitheater. Call 287-3541 for a list of topics.

"Night Skies" at Frenchtown Pond State Park

Tour the universe with the Western Montana Astronomical Association (call 542-5500 for exact dates and details).

4—Fort Owen Day at Fort Owen State Park

Ceremony and celebration to commemorate Montana's first permanent white settlement in 1841.

16—Spring Meadow Lake State Park Triathlon

Biking, running, and swimming (call 444-4720 for details).

16-17—Bannack Days at Bannack State Park

History comes alive in this celebration of the Montana frontier amid shoot-outs, weavers, candle makers, blacksmiths, and old-time musicians. Hearty meals served at the Meade Hotel and a church service offered on Sunday morning.

23—Kids' Day at Spring Meadow Lake State Park

A special day of fun activities for children.

24—Seniors' Day at Spring Meadow Lake State Park

A special day of fun activities for senior citizens.

30—Beach Games at Lake Elmo State Park

A variety of fun and crazy sports events held on the beach of Lake Elmo. Activities include the keg toss, canoe race, football toss, ring toss, and paddleboat races.

AUGUST

"Night Skies" Tour Continues at Frenchtown Pond State Park

Call 542-5500 for exact dates and details.

6—Garden City Triathlon at Frenchtown Pond State Park

Swim, bicycle, and run beginning and ending at the park. For further information call 542-5500.

19-20—Dinner Theater in the Park at Makoshika State Park

"Pitchfork" fondue dinner and a play in the park. A real treat!

WARDENS DO A GREAT JOB

I enjoy your publication; we visit Montana every year and we love it.

I read with interest and admiration John Fraley's "Beyond Road's End" (March/April 1994). The story of the husband and wife "goat hunt "showed the determination and dedication of warden Larry Davis but there was no mention of the penalties imposed on the goat hunters. In the case of "Bob burglar," his sentence was mentioned. The FW&P wardens do a great job but violators should be prosecuted and punished.

Keep up the great work!—*John M. Koenig, Key West, Florida*

•According to Warden Larry Davis, the husband goat hunter received a $500 fine and had his hunting privileges revoked for 18 months. The wife did not receive a penalty, since she never actually transferred her tag.—Editor

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Having just read March/April *Montana Outdoors* I have a question.

The article by John Fraley, "Beyond Road's End," includes a picture (page 5) of a delightful winter camp. My question, were the campers ticketed for tying their horses to the trees?

Love the magazine. Keep up the good work.—*Alan Chandler, Lewistown*

•The photo in question is an older one, taken when tying horses to trees was common practice; today's backcountry guidelines call for more environmentally friendly methods like picketing or suspending a "highline" between trees.—Editor

PERCH-HYPOTHERMIA GETS CHILLY RECEPTION

Bitterroot wildlife rehabilitator Judy Hoy has been crusading against hummingbird feeder perches for several years. Judy's allegation of so-called "perch-hypothermia" (May/June 1994 "Catchall") is based on conjecture, not scientific fact. How can she rule out these more logical explanations as to why a hummer fell off a perch or was found on the ground, provided there were no biopsies or autopsies performed? (1) The hummer was in ill-health; (2) the hummer had been injured previously; (3) the hummer was simply succumbing to old age; or (4) the hummer was already near death by the time it arrived at the feeder. There are too many variables.

I have been attracting hummers to flowers and feeders (with perches) for nearly 25 years. During all of this time I have lived in a wooded mountain canyon where most spring mornings are cool, if not downright cold. I have never seen a hummer fall off a perch nor have I found a hummer on the ground. I don't have cat or dog problems, alluding to the possibility that one of these animals carried the hummer away. Until Judy began publicizing her theory, I had never heard or read about or talked with anyone else who had experienced such a bizarre occurrence.

I also find it curious that Judy can tell a "migrant" from a "resident" hummer, unless, of course, the bird was banded or positively identified by some other scientific means.

Is it fair to good hummingbirders to try to convince them they are killing off hummingbirds by allowing them the opportunity to perch on a feeder and conserve energy? Judy Hoy has not offered us a shred of evidence.—*Jeanette Davis, Proprietor, Birdwatchers' Country Store, Missoula*

The "See, I told you so!" folks are poised to delay prudent environmental protection and conservation efforts with any premature overstatements they can cite to attack the credibility of thoughtful people. In a time of serious environmental problems and indications of potential loss of biological diversity, we are caught between dangers of not acting soon enough and sounding alarms extrapolated from relatively few anecdotes and poorly documented trends. What may be interpreted as a connection between perch hypothermia and drastic declines in hummingbird populations is an example of such an extrapolation.

Since I was quoted (selectively) in "Hummingbird Lovers: Beware of Perch-Hypothermia" (p. 31, May/June 1994) by Judy Hoy, I feel a responsibility to put this phenomenon into some perspective. I cannot deny that something happens just because I never saw it happen or am skeptical about it (e.g., hummingbirds "hitch-hiking" in a goose's plumage or hummingbirds dying from drinking while perching)! So, we can make a calculation to see if it could happen. The largest meals we have recorded from free-flying (outdoor) hummingbirds amounted to 0.55 grams, about one-sixth of the bird's body weight. If the feeder fluid was 1 degree F. above freezing, 0.55 grams at 33 degrees F. and 3.25 grams of bird at 104 degrees F. would average out to 3.8 grams at 94 degrees F., barely into the range for hypothermic torpor, so maybe a hummingbird nearly "out of gas" could have problems with overdoing the first meal at dawn.

However, we record these meal sizes from wild hummingbirds routinely when they PERCH atop an electronic balance at a feeder, at our chillier 9,500-foot elevation in Colorado. In several years of study with several hundred individual birds, we never observed hypothermia at the perch or nearby. Since the birds are banded, we have detailed records of their persistence. The females' life expectancy is about 2 years, that of males about 1.5 years (determined mostly from birds captured in a trap with a perch-less feeder). About half of all the females present one year return the next; one survived to the North American hummingbird record, 12 years!

I remain to be convinced that feeding is killing as many birds as flying against picture windows or becoming trapped in abandoned cabins, barns, and outhouses (where hummingbirds cannot seem to figure out they must go down, not up, according to

their apparent instinct for escape)—to say nothing of death caused by cats, automobiles, and electric cattle fences (I have seen each).

But let's suppose that Montana hummingbirds are particularly sensitive to "feeder hypothermia." I am even less alarmed about "the drastic declines for all species in 1993" which Mrs. Hoy reports from Montana feeder-watchers. Analyzing a decade of flower counts and banding-capture records, David Inouye, Nickolas Waser, and I reported (*Condor* 93:279-285, 1991) that the number coming to feeders correlated fairly well with how many flowers there were NOT. In the better flower years, fewer hummingbirds bothered to come to feeders. Thus, a feeder-watcher may be watching in the wrong place!

When mentioning the rufous [hummingbird] decline, Mrs. Hoy did not quote the following from my letter of the past fall: "1993 was an interesting year, but not a disastrous one for our little friends....We were in the Swan Valley banding and observing 22 May through 6 June. [We were often asked]: 'Where are all our hummingbirds this year?' Well, we think that they were there all right, but just found the flowers ready, so...they went directly to territories for breeding. We found 20 male calliopes and five male rufous on territories spaced out along a 1.75 mi. stretch of USFS road...when the local folks were seeing few at feeders...[and banded] 46 of the two spp. So I don't think they had been devastated by anything....Later when the rufous and calliopes were migrating south at RMBL [Colorado], we captured 760 rufous and the most calliopes for any year (174), nothing to give me any hint that something was wrong."

It certainly would not hurt to remove the feeder perches—"when in doubt, don't." However, to imply that perch-caused deaths may be the cause of (poorly documented) "drastic declines" strains credibility! Surely one can find more serious threats to Montana's fantastic biodiversity against which one can crusade!—*William A. Calder, Professor; Department of Ecology & Evolutionary Biology; The University of Arizona; Tucson, Arizona*

CRP: Success or Failure?

Your recent article in the May/June 1994 issue fails to ask some fundamental questions about the Conservation Reserve Program (CRP) and its effectiveness. Much of Montana's agricultural acreage cannot be farmed without significant soil erosion as well as crop failures—not to mention the loss in wildlife habitat. Without the continual aid (read welfare) of government subsidies like CRP and all the rest, most of this land would have gone out of production years ago.

Rather than sustain what is essentially a nonsustainable and highly destructive practice by subsidizing landowners further with programs like the CRP, we should take these lands out of production—permanently. According to the state agricultural statistics profile, the average price of ag land in Montana is $150 to $200 an acre, and often less than $100 an acre on the marginal lands in eastern Montana where most of the CRP funds are spent. Since farmers "earn" up to $50 per year per acre enrolled in the CRP program, the public winds up paying as much as $500 per acre over the 10-year CRP contract for land we could buy outright often for a fifth of that price.

Furthermore, if we purchased the land we would permanently take these lands out of production, wind up with lasting wildlife habitat benefits, and gain public access. Wouldn't this be a far wiser expenditure of federal funds? Think of it, no more begging farmers for permission to hunt or fish on "their" lands—lands we have paid for over and over again.

Rather than a success, CRP is a failure because it provides no long-term protection and perpetuates the welfare agricultural economy of eastern Montana.—*George Wuerthner, Eugene, Oregon*

•*We agree that in a perfect world highly erodible land would not be farmed, but the fact is that in the absence of CRP much of this land will continue to be farmed with predictable consequences to wildlife and the environment. CRP offers an alternative to "business as usual," and has a proven record of wildlife, soil, water, and recreation benefits. While it may be true that buying the land would be a better deal for taxpayers, the vast majority of it is not for sale.*—Editor

Photo Issue Provides Hope

I do not "subscribe" to your magazine directly. My father, who lives in Polson, and I—living now in Germany—have an unmentioned, unsigned pact that says he will help to keep me sane by sending me every issue of *Montana Outdoors*.

Right on time, I received your January/February 1994 issue and felt deeply compelled to write. As I paged through and read each caption, I relived 20 years of growing up in northwest Montana. Since leaving in 1990, my travels have taken me to 10 countries in Europe. In each one I have searched for that little bit of "home." From the Alps of Austria and Switzerland; to the Dolomites of Italy; across the plains and steppes of Germany and the Czech Republic; through the valleys of the Black Forest and the rivers Rhein, Main, and Mosel; along the shores of the Mediterranean, the Atlantic, the Baltic, the Gulf of Mexico; the Montana that I know is nowhere to be found. I have fished the waters, skied the slopes, hiked and camped the valleys, and none can compare with Montana. But through your magazine I have found hope. It is best stated on page 27 by Sigurd F. Olson: "...the feeling that here things have not changed." It is that feeling for which I long, and which will always draw me back to Montana.

Thank you for hope. Your pictures will be on my mind each day until I return.—*First Lt. Hugh A.Theiler, Ansback, Germany*

Just a short message to let you know how extremely happy I am with your January/February 1994 issue.

The photography and the sentiments were exemplary. I will cherish this issue and keep it in a safe place, that I might enjoy the mood it evokes.

Thank you.—*Larry Mathena, Fort Collins, Colorado*

THE WONDER MINNOW

by Tom Palmer
Information Officer
Conservation Education Division

There is a place in eastern Montana where the road and sky have collided with a million-dollar-a-mile pipeline, road-building bulldozers, and a minnow that's banished all notions of progress and machismo from its kind.

The place is Big Coulee Creek, a lazy tributary to the Musselshell River that uncoils for 78 miles between Rapelje and Lavina. The improbable minnow is of mixed stock, a hybrid cross between the northern redbelly dace (*Phoxinus eos*) and the finescale dace (*Phoxinus neogaeus*). The tiny fish has maintained a low profile in Montana for centuries, but in the past two years it has managed to scrap with the on-again, off-again Altamont Gas Transportation Project and the Montana Department of Transportation (MDT).

Long ago, when the northern redbelly and the finescale dace spawned they produced a discrete species of all-female fish. There ain't a male in the bunch, but the fish keeps making babies. And the babies are all female. There are about 50 "asexual" fish, amphibians, and reptiles known to exist in the world, but Montana's minnow is the first and so far the only asexual vertebrate found in these parts.

In 1992 the Altamont pipeliners learned that solacing Montana's rare fish would require some environmental concessions. The natural gas pipeline, and its extended delivery system, would stretch from Prince Albert, Alberta, through central Montana to Opal, Wyoming. If the pipeline dream is ever fulfilled, it will likely have to make a bit of a jog around the girls in Big Coulee Creek.

Closer to home, MDT discovered the minnow's cool influence last summer when a $1.2 million, three-mile-long construction project on Big Coulee Road was driven back to the drawing board to conserve hybrid dace habitat. "It's the first time we've ever tried to accommodate a fish of this size," said MDT civil engineer Mark Peterson. "I think it has helped us learn a little more about what we can do to accommodate fish in the stream."

The dace was first discovered in Montana in McDonald Creek near Winnett in 1948, and became one of Montana's most obscure species of special concern more than 35 years later. The Big Coulee Creek dace turned up in a 1985 population sample of Musselshell River drainage minnows conducted by Wade Fredenberg, who was then an FW&P fisheries biologist. Fredenberg has since moved on to the U.S. Fish and Wildlife Service, but he still remembers his first encounter with the dace. "I didn't know there was such a creature," Fredenberg recalled. "We found it in some of the most degraded and low-water areas of the stream, and we knew right away it was something different."

Natural Heritage Program records show the hybrid has been found in 11 streams, a reservoir, and a pond. Each body of water is located east of the Continental Divide. Similar all-female dace populations have been found in Colorado, Maine, Nebraska, New Hampshire, New York, and in Alberta and Quebec, Canada. But in these scattered states and provinces, both northern redbelly dace and finescale dace are home-grown minnows.

Illustration by
Harold (Rich) Stevenson © 1994

Here in Montana the mystery of the all-female minnow is seriously fishy. While the northern redbelly dace is fairly common in the same kinds of languid bogs, creeks, and ponds that harbor the hybrid dace, the finescale dace swims in no Montana waters. Researchers suspect the finescale's range into Montana was blocked by Ice Age glaciers.

How Montana's hybrid dace came to take such a peculiar reproduction path of least resistance can't be easily answered, but in light of the historical absence of finescale dace, recent hybridizations are out of the question. Each new fish, and perhaps entire populations in some areas, are clones,

exact Xerox copies of a long-gone matriarch.

In the normal course of reproduction, each partner contributes one copy of each chromosome to each egg. This chromosome set contains genes that define the differences as well as likenesses between parent and progeny. In the grand scheme of evolution, the random combination of genes that

unravel from the random pair of chromosomes is every species' promise that its kind will always possess the genetic vigor to resolve environmental challenges. The all-female hybrid dace, however, issues rubber-stamp replicas of itself over and over again by dumping all of the chromosomes from both the northern redbelly dace and the finescale dace into every egg. It's an odd twist on grandmother's hen-house advice to never put all your chromosomes into one egg, but it is no less a recipe for eventual doom. The hybrid dace cannot evolve by natural selection because it never receives new genetic material.

This can get confusing, but hybrid-dace reproduction essentially comes down to determined northern redbelly sperm delivering little more than a wake-up call to the hybrid's eggs. New genetic material from the male partner is never passed on through the matings. The eggs quicken, however, and begin to develop without ever having to fuss with old-fashioned fertilization.

As disquieting a notion as it may be for even the most politically correct males of our species, when thoughts turn to the ways of birds and bees, we seldom come around to a basic biological truth: females are equipped to provide everything an embryo needs to grow. Stephen Jay Gould, the *Natural History* essayist and Harvard University professor, asks a question that echoes the evolutionary way of the hybrid dace: "Why bother with sex if one parent can supply the essential provisioning?"

In Gould's essay, "Big Fish, Little Fish," contained in *Hen's Teeth and Horse's Toes—Further Reflections in Natural History*, he writes: "The answer to this old dilemma seems to lie in the nature of Darwin's world...Sex generates an enormous array of variation by mixing the genetic material of two creatures in each offspring. If only for this reason, we shall have males to kick around for some time."

For ancient and mysterious reasons the northern redbelly/finescale dace hybrid has kicked males out altogether. But there's no reason to think that the hybrid dace is, therefore, expendable.

Fred Allendorf, a biology professor at the University of Montana, is directing an investigation of the dace hybrid found on the Nature Conservancy's Pine Butte Preserve northwest of Choteau. He says ecological genetic studies have shown that asexual hybrids often have a survival advantage because the combination of genes from both species can produce an animal better equipped to survive and reproduce under a wider range of conditions. It other words, the all-female hybrid dace is a kind of Wonder Minnow, and probably a hardier fish than either the northern redbelly dace or the finescale dace. The spot where Wade Fredenberg found the wee hybrid dace in Big Coulee Creek was memorable because the fish managed to survive in second-rate minnow habitat.

Yet there remains a significant hitch for this fit little minnow. The species' lot is to live in evolutionary limbo because—unlike its ancestral parents—it cannot evolve by natural selection in response to environmental change.

So why should a pipeline or a road veer a millimeter to comfort a curious two-inch minnow whose fate is predestined?

Beyond being the proper thing to do, there is a rare and distant chance that the hybrid dace could become sexual again and that renewed sexuality could then give rise to natural selection and other vital evolutionary processes. It's happened before. Some 50 million years ago, about the time the dinosaurs faded to extinction, an asexual fish gave rise to salmonids, the family of trout and salmon species that have fascinated hungry and sports-minded *Homo sapiens* for ages.

"A species like the hybrid dace would never mean anything to anyone, unless you understand how unique it is," Fredenberg said. "It is one of those oddities of nature that you just have to admire for the kinds of adaptations it has made to survive."

Wallace L. Crawford: A Friend of the River

by Neil Cantwell

Beginning in the early 1970s, Wallace Crawford and his wife, Marj, visited the Bitterroot Valley each summer. Each year the lure of the Bitterroot called them back. In 1977, they sold their business in Chicago and moved to Montana. They built a new home near Corvallis and Wally was able to fish his favorite trout stream almost daily.

Shortly after his arrival, Wally and several other avid fly fishermen got together and formed a loosely knit fishing club. As one member put it, "...just a bunch of guys who loved to fish." Then, in 1985, Wally suffered a fatal heart attack. His friends were shocked and saddened by his untimely death.

Now that he was gone, how best to remember Wally Crawford? His

NEIL CANTWELL

Wally Crawford

companions in the club finally hit on a plan: Why not improve one of his favorite spots, the Como Bridge area south of Hamilton?

As the group undertook the task, they contacted the Department of Fish, Wildlife & Parks. The department agreed to contribute the labor needed to improve the one-acre plot. Plans included construction of a boat ramp, a graveled parking lot, and a picnic area.

Wally's many friends contributed more than $5,000 in his memory. The final touch to the Wally Crawford Memorial Fishing Access Site was added when Marj requested that a stone set with a bronze plaque be placed along the river's edge. The plaque reads:

Wallace L. Crawford
1916-1985
A Friend of the River

For Wallace L. Crawford

Summer is considered the brightest, the happiest, the best time for all of us who love the outdoors. Living is easy and man was meant for summer and summer for man. What better excuse is there for summer?

I think I knew Wallace in the summer of his life. His wife Marj, his family, and his old friends also knew him in his other seasons, but I have always thought of Wally as a summer man. He was contemplative like a summer morning; raucous like a summer storm; roguish like the teasing of an almost summer rain, genuine and unequaled like a summer day.

If Wally was a summer man, he chose the sport for it. Summer is the time of times. The mind and body are relaxed and easy, the sun warm and bright, the colors strong, and the days long. For Wally and me, and I'm sure for all of us, summer is low water and high sun. I know of no lovelier time.

There is a special day in my memory, when Wally and I went fishing. It was in August or September and, on our way to the upper Bitterroot, I mentioned that I had out-of-town guests for dinner, and if we caught any fish, I'd like to keep four.

After fishing for some time with no luck, we came to an island in the river that was perhaps Wally's favorite spot. We agreed that he would fish his area and I would cross the island and fish some lesser water. I called to him as I left that if fish started rising, he should give me a shout.

"Okay," he agreed, "I'll shout."

I picked my way through brush and over logs until I was across the island. I began working my way upriver with no luck. It took the best part of an hour to reach the junction where the river split. As I looked downriver toward Wally, I saw a hatch on the big pool he was fishing, and the fish were rising. There was Wally attached by his line to a beautiful trout.

I stood and watched him land the fish, unhook it, and slide it back into the water. He cast again, hooked another fish, released it, and began casting to the rises. He had just hooked another fish when I walked up to him and said quietly, "Looks like you're catching fish."

"I am, he said, "it's a fish all right," and he went on playing it. My voice rose as I told him I could have used those fish for dinner that night, and asked why he had released them. He chuckled and said, "You can't help long-line releases."

"What about the one you released five minutes ago, and the one before that?"

"Oh," he said, "you saw those, too?"

Then he grinned, as only Wally could, like someone who had gotten away with a delightful little crime, and opened his creel to show me four fat trout.

"There," he said, "you didn't need those fish for dinner after all. I caught these for you."

I responded with a "Thanks, but I would rather have caught them myself. Why didn't you shout? You said you'd shout if fish started rising."

He said he had shouted. "Why didn't I hear you?" I demanded.

"It was such a peaceful summer afternoon," Wally said, as he opened his pocket knife and began to clean my fish. "I didn't want to disturb it, so I only shouted once, and very quietly."

We shall miss Wallace Crawford, that wise and gentle rogue of a man who touched our hearts. We shall not see his like again, but we are fortunate to have the gems of memories that he gave each of us.

Contributors

Madison trout in the Marias? Most folks would say these rivers are as different as night and day. Yet, as **Bruce Auchly** points out in his article on page 3, "Now...the rivers share a bond through a transfusion of wild Madison rainbows into a small stretch of the Marias." Biologists foresee a goal of 500 catchable trout per mile in the 15-mile stretch of the Marias below Tiber Reservoir, where the water flows clear and cold from Tiber Dam. Auchly, who counts trout fishing among his outdoor pastimes, is the FW&P information officer in the Great Falls (Region Three) headquarters.

Liebelt

"The goldeye," concedes **Jim Liebelt**, "has not won the hearts of many fishermen in this neck of the woods," but it more than makes up in numbers and willingness to bite what it lacks in fighting ability. Flat-bodied fish with silvery sides, goldeye are found mainly in turbid reaches of the Missouri and Yellowstone drainages. Until a few years ago they were netted commercially in Fort Peck Reservoir, primarily for sale to the Canadian market. To learn more about this interesting member of the mooneye family, turn to "The Life and Times of the Silver Flash" on page 6. Liebelt is a fisheries biologist and information officer stationed in FW&P's Glasgow (Region Six) office.

According to Forsyth-based wildlife biologist **Scott Denson**, the Isaac Homestead Wildlife Management Area near Hysham has several unique attributes (page 10). But if he had to sum up the area's management philosophy in one word, that word would be "partnerships." Guided by conservation principles set forth by Aldo Leopold a half-century ago, FW&P, BLM, and local landowners developed a joint management plan for Isaac Homestead and adjacent BLM and private lands in 1985. Through this "Leopoldian Alliance," says Denson, "sportsmen and the local community are both winners."

They are as small as hummingbirds and as large as hawks, as colorful as tanagers and as drab as sparrows. They are all "neotropical migrants," a term applied to the many birds that fly south of the U.S. border each winter in search of food. "In Montana," says **Deborah Richie**, "over half (144 species) of our breeding land birds are neotropical migrants, and many are tiny songbirds." In an effort to make people more aware of these birds and their special habitat needs, FW&P and Region 1 of the U.S. Forest Service collaborated in producing a special 16-page supplement called "Birds of Passage" (page 15). A former wildlife interpretive specialist with FW&P's Conservation Education Division, Richie now works as watchable wildlife coordinator for the U.S. Forest Service in Missoula (a cooperative position with The Nature Conservancy).

Richie

This year's State Parks Poster Contest for fifth grade students—based on the theme "state parks are for families"—inspired an array of colorful, creative efforts from youngsters all across Montana. Beginning on page 5, **Debbie Cheek**, field support supervisor for the Parks Division at FW&P headquarters in Helena, introduces the winning entries. The posters, chosen in April by a panel of five judges, will be on display at department headquarters through summer and early fall.

Cheek

A long-forgotten birthday card and a fly tied by an older brother brought back memories for Missoula angler and writer **John Haviland**—memories that culminated in a fishing trip to the Clark Fork River and a late-night phone call. To learn the fate of "The Birthday Fly," turn to this issue's "Perspectives" installment on page 34. Haviland's story is accompanied by the creative touch of artist **Dan Coughlin**, who works from his home/studio at 4680 Last Straw Drive, Helena, MT 59601.

MO thanks the following photographers and artists for their contributions to this issue: **Erwin and Peggy Bauer**, **Harold (Rich) Stevenson**, and **Keith A. Szafranski**, Livingston; **Rick and Nora Bowers**, Tucson, AZ; **Neil Cantwell**, Grand Junction, CO; **Dan Coughlin**, and **Lee Graves**, Helena; **Harry Engels**, Clancy; **Helen Flath**, Bozeman; **John R. Ford**, Land O'Lakes, WI; **John Haviland**, **Chris Paige**, and **Zed Ruhlen**, Missoula; **Donald M. Jones**, Troy; **Mark Lagerstrom**, Darby; **John McNeal**, Billings; **Bill McRae**, Fairfield; **Neal and Mary Jane Mishler**, and **Alan G. Nelson**, Great Falls; **Ron Spomer**, Troy, ID; **Al Troth**, Dillon; **Tom J. Ulrich**, West Glacier; and **Jan L. Wassink**, Kalispell. Thanks also to the following contributors who work for the department: **Bruce Auchly**, Great Falls; **Bill Gardner**, Fort Benton; **Jim Liebelt**, Fort Peck; **Betsy Spettigue**, Helena; and **Bill Thomas**, Missoula.